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ABSTRACT

This report attempts to remedy the neglect of educational equality in recent educational reports by discussing both the educational status of black Americans and recent policy trends as they affect black students. Following an overview, trends in income and employment, family characteristics, and the degree of social mobility are discussed as a background for examining the educational accomplishments and needs of black students. The next section, "Educational Status," addresses: (1) participation in higher education, specifically undergraduate level participation and fields of study, graduate studies, and educational outcomes and fields of study; (2) indicators of K-12 attainment; and (3) curriculum and course content. The final section, "Policies Affecting Access and Success," considers: (1) school finances and the growing movement toward privatism in education; (2) educational standards, in terms of minimum competency testing and the "New Basics"; and (3) the quality and composition of the teaching force, focusing on teacher competency testing, merit pay, and alternative approaches to reform of teaching as an occupation. Seven figures and forty-two statistical tables are provided. (RDN)

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Equality and Excellence

The Educational Status of Black Americans

UD 024 215

The College Board

Equality and Excellence

The Educational Status of Black Americans

College Entrance Examination Board
New York, 1985

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Preface

The College Board is pleased to publish this report, *Equality and Excellence: The Educational Status of Black Americans*. We believe it presents important demographic and policy information that needs to be considered by all those involved in school reform efforts and in American education generally.

Our nation has asserted a commitment to the twin goals of excellence and equality: In support of this commitment, quality and justice must go hand in hand. Most of the recent reports on educational excellence and the corresponding reform initiatives, however, have ignored the equity side of educational excellence.

In keeping with its position that meaningful and lasting school reform must give clear and careful attention to equity issues, the College Board commissioned social scientist Linda Darling-Hammond to prepare this background paper for a Colloquium on Equality and Excellence, which was sponsored by the Board's Office of Academic Affairs in Miami, Florida, in January 1985. The purpose of the colloquium was to bring both school and college educators together to focus on the quality of education that black students receive and how they may be affected by current school reform policies and proposals. Dr. Darling-Hammond's assessment of the educational status of black Americans is an attempt to fill the gap between reform rhetoric and reality; between policies and the students they will affect. Since no discussion of equity and excellence in education can be conducted outside of the context of the larger society, the report also includes important social and economic data.

The condition outlined in this report is alarming. Although many of the legal barriers to educational opportunity have been removed, education—to a large extent—remains separate and unequal in the United States. Minority students are disproportionately placed in vocational courses or in low track classes in which they are not intellectually challenged, in which teachers often lack enthusiasm, in which expectations normally are low, and in which children get the message that they cannot succeed. Research shows that low track classes devote a greater share of instructional time to rote learning than to activities that develop high level thinking processes such as analysis, questioning, making judgments, and drawing inferences. "Overall," reports Dr. Darling-Hammond, "the evidence suggests that black students are exposed to less challenging educational program offerings that are less likely to enhance the development of higher order cognitive skills and abilities than are white students."

At the same time, the report presents solid proof that improving the educational opportunities of minority students brings about improved educational results. The achievement of black students in elementary and secondary schools, as measured by standardized tests, rose in many areas during the decade of the 1970s, even though serious educational deficiencies still are reflected in the performances of black compared to non-black students. It is this illusion of having made progress while falling behind that perhaps blurs the urgent need for serious public policy directed toward solving this complex national problem.

There are many reasons why it is important to ensure that all students have access to a high quality education. Not least is that it is morally right. The unique promise of the United States has been its commitment to extend opportunity to *all*—not just some—of its children. Since its earliest days, this nation has been dedicated to the principle that each generation deserves a fair start, and acting on this principle has served not only justice but the national well-being. Our social and political problems require thoughtful, informed consideration. We will all be well served if educational excellence can be made possible, not just for the few, but for all students. Beyond the moral consideration, the demographics presented in this report argue an economic urgency for giving equity top priority on the excellence agenda.

Equality and Excellence also examines trends in three policy areas that profoundly affect the quality of education for black Americans: school funding, graduation and other requirements for students, and teaching force changes. It is the College Board's hope that this document will provide background and information that will assist state and local school officials in setting policies and planning activities that will achieve educational excellence without shortchanging equity. Indeed, the Board hopes that this information will be of interest and use to everyone concerned about achieving an excellent education for all students.

We are grateful to Adrienne Y. Bailey, the Board's vice president for academic affairs, who organized the conference at which this report was considered; to Arthur Jefferson, superintendent of the Detroit public schools, who chaired the meeting, to the 47 distinguished educators who participated; and to Linda Darling-Hammond for her work in preparing this important report.

George H. Hanford
President

Equality and Excellence

The Educational Status of Black Americans

Overview

Since the recent wave of reports on educational "excellence" has engulfed the country, numerous reform proposals have been proferred and, in some cases, initiated in states and school districts nationwide. These include changes in curriculum requirements, "standards," and policies for selecting and compensating teachers. However, the reports and the ensuing initiatives largely have ignored issues of educational equality, and analyses of the needs of various pupil populations or the effects on them of new policies have been notable by their absence.

This report attempts to fill part of the void by presenting a brief assessment of the current educational status of black Americans and a discussion of recent policy trends as they affect black students. Among the many trends that emerge from this analysis, the following are most striking.

Demographic Trends

- The structure of black families has changed significantly over the past decade. Households headed by females increased from 28 percent to 41 percent of all black families between 1970 and 1982. This is partly the result of dramatically increased divorce rates and partly due to increases in the numbers of never-married mothers.
- Most black children do not live in two-parent households. In 1982, 49 percent lived with one parent, and 8 percent lived with neither parent.
- In 1982, nearly half (47.6 percent) of all black children 18 years of age and under lived in households below the poverty line. This compares to only 17 percent of white children.

Income and Employment

- The proportion of blacks living in households below the poverty line remained constant at 34 percent between 1970 and 1981, but increased in absolute numbers from 8 million to 9 million persons.
- Real median income for black families decreased by 8.3 percent from 1971 to 1981, and the ratio of black to white median family income declined steadily after 1975 to 55 percent, the same level as in 1960. Although black married couples registered income gains, they constituted a smaller proportion of black households in 1981 than in 1971.
- Unemployment rates for black men and women in virtually all age categories have increased since 1965. In 1982-83, about 1 out of every 5 blacks in the labor market were unemployed, with much higher rates for teenagers and young adults.
- Unemployment rates and labor force participation rates are strongly correlated with educational attainment for both blacks and whites. For blacks, however, marked differences in employability occur only for those with a college degree.
- Although blacks have made strides since 1970 in gaining access to higher-paying and higher-status jobs, whites still were more than twice as likely as blacks to hold jobs in professional or managerial occupations in 1980. Black participation in these occupations was concentrated in jobs at the lower end of the professional pay scale.
- In terms of labor force participation and occupational upward mobility, greater strides were made by black women than black men. The same is true for higher education degree attainment, where the number and proportion of degrees has declined for black men but increased substantially for black women.

Educational Attainment

- Although high school graduation rates have improved dramatically for black students over the past two decades, college attendance and completion rates have declined for blacks since 1975.
- Blacks are seriously underrepresented among graduate and professional school students, and black participation rates in postgraduate education have declined since the early 1970s.
- Blacks have lost ground relative to non-blacks at each stage of the educational pipeline. In 1972, for example, blacks represented 12.7 percent of all 18-year-olds, 10.5 percent of all high school graduates, 8.7 percent of all college freshmen, and, four years later, 6.5 percent of all bachelor's degree recipients. By 1979, blacks represented only about 4 percent of all professional and doctoral recipients.

Higher Education

- At the undergraduate level, 42 percent of black college students were enrolled in two-year colleges in

1980. Persistence rates for two-year college students are much lower than for students attending four-year colleges, particularly for black students.

- Financial aid has a great effect on college retention rates, particularly for black students, who are nearly twice as likely to stay in four-year colleges if they receive aid. The importance of financial aid for black students is apparent, considering that in 1981, 48 percent of black college-bound seniors came from families with incomes under $12,000, as compared to only 10 percent of their white counterparts.
- On the brighter side, over the past decade, blacks have become more similar to whites (and women more similar to men) in the fields of study in which they receive higher education degrees. Increasing proportions of blacks and women are represented in disciplines such as business and management and in math- and science-related fields. However, degrees among blacks still are concentrated in education, humanities, and the social sciences, fields in which salaries are lowest and unemployment rates highest.
- Although predominantly black colleges enrolled only 27 percent of black college students in 1980 (as compared to more than 50 percent prior to 1970) and accounted for only 34 percent of all blacks' undergraduate degrees in 1980-1981, they granted more than 40 percent of all degrees for blacks in agriculture, computer sciences, biology, mathematics, physical sciences, and social sciences.
- In an increasingly technological society, choice of fields is an important dimension of equality. With respect to math- and science-related degrees, blacks lose "field" ground just as they lose attainment ground at several points in the educational pipeline. At the bachelor's degree level, the percentage of those choosing quantitative fields is 60 percent of the national average; at the master's degree level, 40 percent; and at the doctoral level, 33 percent. These choices are affected by two factors: parental education and early educational preparation and achievement.

Elementary and Secondary Education

- The educational performance of black students in elementary and secondary schools, as measured by standardized achievement test scores, rose in many areas over the decade of the 1970s, but it remained lower than that of non-blacks by 1980.
- The strongest gains in mathematics and reading test scores were registered by young black students, particularly those from urban, disadvantaged communities and from the southeastern states.
- However, gains in mathematics and science were far less substantial than for reading, and black 17-year-olds showed stable or declining scores on achievement measures in reading, mathematics, and sciences.
- Black students of all ages performed better in the area of mathematical knowledge (factual recall) than in the area of mathematical skills (performing computations and manipulations), and least well in the area of mathematical applications (the ability to solve problems and use mathematical reasoning).
- Disappointing trends in performance for older students, both black and white, and on higher order cognitive tasks in reading, writing, mathematics, and science reflect disturbing changes in educational methods over the last decade. Between 1972 and 1980, use of teaching methods that might encourage the development of higher order thinking abilities—project or laboratory work, writing tasks, and student-centered discussion—declined in public high schools.

Curriculum Equality

A number of indicators suggest that black students, on average, receive educational programs and offerings that differ in kind and content from those of white students. These differences in the substance of education have grave implications for educational achievement, and later education and career options. For example:

- Black students are disproportionately more likely to be enrolled in special education programs and less likely to be enrolled in programs for the gifted and talented than are white students. However, these proportions vary widely across school districts, suggesting that administrative policies and practices affect placement as much as student characteristics.
- At the high school level, blacks are underrepresented in academic programs and overrepresented in vocational education programs where they receive less educational preparation in areas such as English, mathematics, and science, and therefore, they lose ground in terms of educational achievement.
- Furthermore, black students in vocational education programs are enrolled earlier and more extensively in programs training specifically for low-status occupations than are white students. Typically, these assignments are made by school personnel rather than by election of students or their parents.
- Among college-bound seniors in 1981, most black students had taken fewer years of coursework in mathematics, physical sciences, and social studies than their white counterparts. Even where years of coursework are similar, the content of the courses varies for black and white students. For example, black seniors in 1980 were as likely as whites to have

taken at least three years of math, but they were much less likely to have taken algebra, geometry, trigonometry, or calculus. Thus, their years of coursework were presumed concentrated in areas such as general math or business math.

- Students in low-income and predominantly minority schools have less access to microcomputers and teachers trained in the uses of computers. Furthermore, students in predominantly minority schools or classrooms are much more likely to use computers for drill-and-practice rather than programming or concept development than students in other schools.

Overall, the evidence suggests that black students are exposed to less challenging educational program offerings that are less likely to enhance the development of higher order cognitive skills and abilities than are white students.

Policy Trends

Several recent policy trends have particularly important implications for black students' schooling experiences. This report examines trends in three areas: funding for education; graduation and other requirements for students; and teaching force changes.

Financing Education

Since 1975, state, local, and federal funding for public elementary and secondary education has been made more tenuous by several factors: (1) the property tax revolt of the late 1970s, which impaired the ability of many states and school districts to raise revenues; (2) economic recession; and (3) federal aid cuts under the Reagan administration. Although some states and school districts are beginning to regain a firmer footing, full recovery in the education sector is by no means complete.

In particular, the reductions in federal aid for compensatory education at the elementary and secondary levels, and in student financial assistance for higher education, have negatively affected educational opportunities for black students. Meanwhile, apparently growing support for the "privatization" of education (through tuition tax credits or vouchers) may disproportionately benefit already advantaged students while leaving public education support tenuous.

Student Requirements

Standards for students have changed through the institution of minimum competency testing by many states and localities, and in many places are changing further with newly increased course requirements for graduation. While it is difficult to oppose "standards," the effects of these policies must be considered carefully.

Minimum competency tests may improve educational quality by increasing attention to the so-called "basics" of education. There is some evidence, however, that the skills represented on minimum competency tests are not "enabling" skills that lead to higher order thinking abilities. Instructional programs built around competency tests tend to emphasize rote learning at the expense of higher order cognitive skills; use test-oriented activities such as lectures and multiple-choice worksheets and tests rather than performance-oriented activities including discussions, writing, and projects involving problem-solving; and de-emphasize nontested subjects such as science, social studies, and the arts. Furthermore, students who are denied promotion as a reusult of these programs make less progress in educational achievement than similar students who are not retained in grade.

The potential benefits and detriments of minimum competency tests and similar approaches to educational improvement must be weighed carefully in the context of what they actually measure and the type of teaching they encourage.

Increased requirements for graduation—the so-called "new basics"—also hold promise for improving the content of educational programs and reducing existing differences in students' schooling experiences. However, uniform educational requirements, if administered without flexibility and sensitivity, may exacerbate dropout rates, raising standards for some while excluding others from school altogether. Equally important is the fact that there is not now a sufficient number of qualified teachers to teach the new basics (particularly advanced mathematics and science courses), and teacher supply looks still more grim for the foreseeable future. Inequalities in available teacher resources also will affect the quality of minority students' educational programs, whether or not they are conducted under the rubric of the new basics.

Trends in the Teaching Force

Emerging teacher shortages have led to projections that by 1988 only 70 to 80 percent of the demand for new teachers will be satisfied. Furthermore, new entrants to the profession are less able academically than in the past when education benefited from a captive labor force of academically talented women and minorities who were barred from other professional occupations. Now such students are choosing other more lucrative professions. Low salaries and low occupational prestige are major reasons for the difficulties of recruiting new entrants into the teaching profession. Unprofessional working conditions contribute further to current high levels of teacher dissatisfaction and attrition.

The result for students where qualified teachers are not available is that courses are taught by those inadequately prepared in the subject area, class sizes are increased, course content is "watered down," or courses simply are not offered.

Two popular policy responses to the problems of attracting and retaining qualified teachers are competency testing of preservice teacher candidates and merit pay for in-service teachers. By 1983, 30 states had mandated competency tests for teacher certification, and 12 additional states were considering such a move. Despite the fact that research has found no consistent relationship between scores on such tests and later teaching performance, the tests are viewed as a means of preventing incompetent teachers from entering the profession. The tests disproportionately eliminate minority candidates from teaching since the failure rates for blacks and other minorities are two to ten times higher than those of white applicants in states using the tests.

Whether these outcomes are the result of inferior educational opportunities available to minority teaching candidates or to cultural bias in the tests themselves, the differential passing rates are a source of social concern. Critics argue that if the tests do not predict actual ability to teach, they are exacerbating teacher shortages and eliminating minority teachers from the profession at great expense to minority children and to the society at large—without commensurate gain in educational quality. Even if the tests do sort out less qualified teacher candidates, they do not address the overall problem of improving the attractiveness of teaching and increasing the pool of academically talented recruits.

Merit pay for in-service teachers also fails to address the roots of the problem in the teaching force. Even if the shortcomings of past merit pay plans are overcome, they will do little to enhance recruitment or retention unless major changes are made in teachers' salaries and working conditions. The education of minority children is most threatened by these trends in the teaching force, since they attend school in areas of the country and school districts where salaries and working conditions for teachers are least conducive to attracting and retaining high quality teachers.

Conclusion

Black students have made great strides since 1960 in pursuing and profiting from enhanced educational opportunities. Levels of educational attainment have improved, and disparities in fields of study and later career options have begun to narrow. Some erosion in these gains has occurred since 1975, however, and current policy trends threaten to reverse the movement toward equality.

"Excellence" for black students will not become a reality unless and until they receive enriched curricular opportunities in elementary and secondary schools, sufficient financial assistance to pursue higher education opportunities, and instruction from well-qualified teachers. Attainment of these goals means that the excellence agenda for black students cannot ignore the adequate and equal financing of public education, the appropriateness of courses and achievement measures intended to enforce higher standards, or the policies that will ultimately determine who will teach in our schools.

Of paramount importance is the content and *substance* of education received by black students. Although finances and broad program supports cannot be ignored, in the final analysis it is the interaction that goes on between students and teachers in individual schools and classrooms that defines educational quality and equality. Subtle and not-so-subtle differences in curriculum, course content and teaching methods, the qualifications and commitment of school personnel, and the opportunities for innovation and enrichment at the school site ultimately determine which students will receive a true education and which will merely be trained to assume a permanent role in the nation's underclasses.

These are not issues currently at the forefront of the nation's attention. Educators and policymakers who are concerned about equality, as well as fundamental excellence, must put them there.

A Context for Examining Educational Equality

Over the past two years, the American public has been nearly overwhelmed with studies analyzing the weaknesses of our nation's schools and offering a variety of prescriptions for reform. Beginning with *A Nation at Risk: The Imperative for Education Reform*, issued in April 1983 by the National Commission on Excellence in Education, the string of reports has called for higher standards, longer school days and years, changes in course requirements, and reforms in teacher personnel policies to stem the "rising tide of mediocrity" that many critics believe has engulfed the schools.

Most of the reports have paid little attention to the various dimensions of equity in providing educational services, referring at most to a generalized notion that equality and excellence ought to be joint goals of school reform. As initiatives for redesigning schooling have proliferated at the state and local levels, analyses of the needs of different pupil populations or the effects upon them of new policies have been notable largely by their absence.

This report, which presents a brief assessment of the current educational status of black Americans, attempts to address some part of the void by providing background information about black students, their families, and their educational attainments and opportunities, so that policymakers and practitioners will have a basis for evaluating reforms. It is hoped that assessing how far we have come with respect to equality will inform our decisions about how to achieve excellence for all the nation's schoolchildren.

Educational attainment is but one aspect of equality. Conditions of income and employment, family characteristics and the degree of social mobility are both products and precursors of educational success. This section discusses trends in these factors as a background for examining educational accomplishments and needs of black students.

Demographic Trends

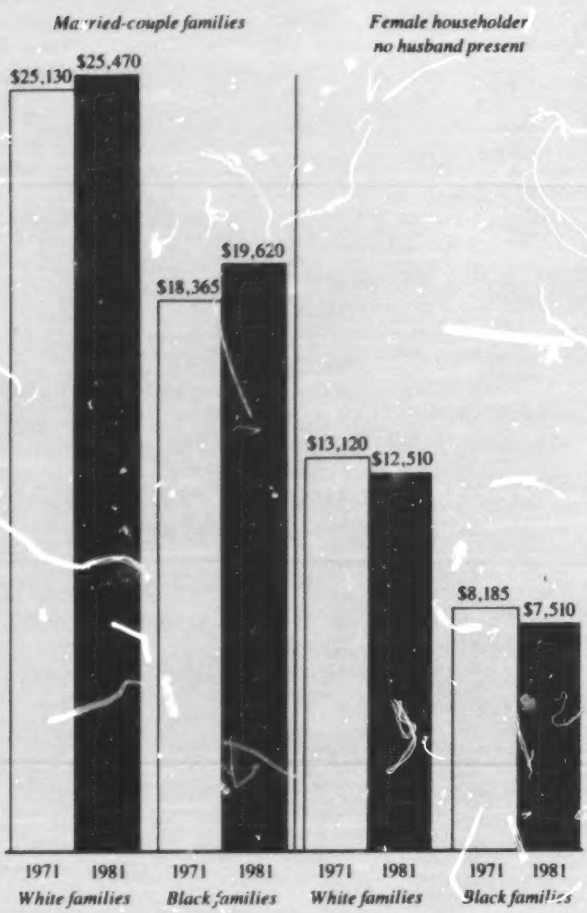
Black Americans now represent about 12 percent of the country's population, having grown from 22.6 million to 26.5 million between 1970 and 1980. Although many blacks had moved north during the early part of this century, that migration was reversed during the last half of the 1970s, when more returned to the south than left. In 1980, 53 percent of the black population resided in the south. Even though the black population outside of central cities increased by nearly one-half during the 1970s, about 58 percent still lived in central cities in 1980 (Bureau of the Census, 1984). Thus, educational conditions in the south and in central cities are particularly important for black students.

The age structure of the black population is relatively young, with a median age of 24.9 years in 1980, compared to 30 for the total U.S. population. Thirty-one percent of blacks were between 5 and 19 years of age, while 26 percent were in the household-forming and childbearing years of 20 to 34, suggesting that their children will comprise a significant portion of the schools' population throughout the remainder of this decade and the next (Jones-Wilson, 1984). In the fall of 1980, black students comprised more than 16 percent of total public elementary and secondary school enrollment, a proportion substantially higher than their representation in the overall population.

The structure of black families has changed significantly over the past decade. Households headed by females have increased from 28 percent of the 4.9 million black families in 1970 to almost 41 percent of the 6.4 million black families in 1982. This compares to an increase of 9 to 12 percent during the same time period for white families. Since 1970, the percentage of all black families maintained by married couples has declined from 68 percent to 55 percent, partly due to the result of increased divorce rates (the divorce rate for black women grew from 104 to 265 per 1,000 married couples between 1970 and 1982). About one-third of all black families headed by females are maintained by women who never married.

As a consequence of these changes, fewer than half of black children (42 percent) lived with both parents in 1982; 49 percent lived with one parent (usually the mother); and about 8 percent lived with neither parent (Bureau of the Census, 1984). Because households headed by females are substantially poorer than those headed by married couples, earning less than half as much on average (see Figure 1), children in these households are more likely to live in poverty. In fact, in 1982 nearly half (47.6 percent) of all black children 18 years of age and under lived in households below the poverty line (see Table 1). The comparable figure for white children was only 17 percent (Vaughn-Cooke, 1984). Clearly, these differences in family situation reflect not only income disparities but differences in lifestyle and life chances as well.

Figure 1. Median Family Income by Type of Family and Race of Householder: 1971 and 1981 (1981 dollars).



Source: U.S. Department of Commerce, Bureau of the Census.

Table 1. All Persons Below the Poverty Level in 1982 by Age and Race

Age	*Black*	*White*
Under 3	51.5	18.4
3-5	47.7	19.2
6-13	48.0	17.1
14-15	44.0	15.3
16-21	39.3	13.0
22-44	27.3	10.1
45-54	21.9	7.9
55-59	30.3	7.8
60-64	26.8	9.6
65 & over	38.2	12.4

Source: U.S. Department of Commerce, Census Bureau, *Consumer Income* Series P-60, No. 140

Table 2. Median Family Income in 1960 and 1970 to 1982 by Race

Year	*Black*	*White*	*Black/White Ratio*
1960	$ 3,230	$ 5,835	.55
1970	6,279	10,236	.61
1971	6,440	10.672	.60
1972	6,864	11,549	.59
1973	7,269	12,595	.58
1974	8,006	13,408	.60
1975	8,779	14,268	.62
1976	9,242	15,537	.59
1977	9,563	16,740	.57
1978	10,879	18,368	.59
1979	11,574	20,439	.57
1980	12,674	21,904	.58
1981	13,266	23,517	.56
1982	13,598	24,603	.55

Source: U.S. Department of Commerce, Census Bureau, *Consumer Income*, Series P-60, No. 140.

Income and Employment

Over the past half decade, blacks have lost ground in terms of income in both absolute and relative comparisons. In real terms, the 1981 median income for all black families ($13,266) decreased by 8.3 percent from 1971. Most of the loss in purchasing power occurred between 1980 and 1981, during the first year of the Reagan administration (Bureau of the Census, 1984). Relative to the income of white families, the median income of black families declined steadily from a high of 62 percent in 1975 to only 55 percent of the median income for white families in 1982, a return to the 1960 level before the gains of that decade were realized—and lost. (See Table 2.)

Although income levels fell for the overall black population, Table 1 shows that black married couple families registered a gain in real income between 1971 and 1981, increasing their earnings (measured in 1981 dollars) from $18,370 to $19,629. White married couple families registered a slightly smaller gain, but continued to earn more. However, as noted previously, black married couple families constitute a smaller proportion of black families than they did a decade ago.

The proportion of blacks living in households below the poverty line remained constant at 34 percent between 1970 and 1981, but increased in absolute numbers from 8 million to 9 million persons. The number of persons living in poverty also increased for the white population, from 17 million (10 percent) to 22 million (11 percent) over the same time period. Between 1979 and 1981 alone, the total number of persons living in poverty increased by 5.4 million (Bureau of the Census, 1984).[1] Black unemployment contributed significantly to the increase in the number of

1. The poverty level for 1981 was $9,287 for a family of four.

people below the poverty line and to the decline in real income among blacks. As Vaughn-Cooke (1984, p. 2) notes, and as Tables 3 and 4 demonstrate, "The 1982-83 recession has been the most devastating employment experience for blacks in the more than 35 years since employment statistics have been kept by race." Unemployment rates for black men and women in virtually all age categories have increased since 1965, and in 1982-83, about 1 out of every 5 blacks in the labor market were unemployed. The proportions were much higher for younger people (18 to 24 years of age) looking for work, hovering between 40 and 50 percent for teenagers and near 30 percent for those between 20 and 24 years of age. In nearly all age categories, blacks were at least twice as likely as whites to be unemployed in 1983.

Reversing a long-standing trend, unemployment rates were higher in 1982-83 for black men than women between 18 and 44 years of age; the reverse was true for those 45 years of age and older. Although men are still more likely to be in the labor force than women, that condition is changing. As Tables 5 and 6 indicate, labor force participation rates for black males have declined in all age categories since 1955, while those for black females have increased, as they have for white females.

Official unemployment rates understate the magnitude of unemployment problems, since they do not include discouraged workers who have ceased looking for work. Urquhart and Hewson (1983) estimate that there were 1.8 million discouraged workers by the end of 1982 and that blacks and other minorities accounted for 32 percent of this total, far disproportionate to their share of the labor force. (Blacks constitute about 9.4 percent of the nation's employed work force.) These statistics suggest that, in addition to possible discriminatory employment practices, the types of jobs held by blacks are those particularly vulnerable to economic downturns and, further, that the skills possessed by young people seeking to enter the labor market are not those required in the current economy.

Educational attainment is an important factor in employment chances. As Table 7 demonstrates, labor force participation rates and unemployment rates are directly correlated with educational attainment for both men and women, regardless of race (Young, 1983). For example, 94 percent of black male college graduates and 90 percent of black female college graduates were in the work force in 1982, and their unemployment rates were 8.9 percent and 5.4 percent, respectively. Unemployment rates for those with only a high school diploma were twice as high as those for black male college graduates and nearly three times higher than for black female college graduates.

However, while the effects of education on unemployment are evident for white workers at each stage of educational attainment, marked changes in unemployment rates for blacks occur only at the college level. That is, each

Table 3. Unemployment Rates and Unemployment Ratios 1955-1983 for Male Workers by Race

	18-19 Years			20-24 Years			25-34 Years			35-44 Years			45-54 Years			55-64 Years		
	Black	White	B/W Ratios	Black	White	B/W Ratio	Black	White	B/W Ratios	Black	White	B/W Ratios	Black	White	B/W Ratios	Black	White	B/W Ratios
1955	12.9	10.4	1.2	12.4	7.0	1.8	8.6	2.7	3.2	8.2	2.7	3.2	6.4	2.9	2.2	9.0	3.9	2.3
1965	20.2	11.4	1.5	9.3	5.9	1.5	6.2	2.6	2.2	6.2	2.6	2.0	5.1	2.3	2.2	5.4	3.1	1.7
1975	32.9	17.2	1.9	22.9	13.2	1.7	11.9	6.3	1.9	11.9	6.3	1.9	9.0	4.4	2.2	6.1	4.1	1.5
1982	47.4	21.1	2.2	32.0	15.3	2.1	19.6	10.4	1.9	19.6	10.4	1.9	10.0	6.3	1.6	11.9	5.8	2.2
1983	42.7	18.3	2.3	30.4	11.4	2.7	14.9	7.2	2.1	14.8	7.2	2.1	12.1	4.6	2.6	7.3	4.7	1.5

Source: *Employment and Training Report of the President, 1982; Employment and Earning*, Bureau of Labor Statistics, November 1983.

Table 4. Unemployment Rates and Unemployment Ratios 1955-1983 for Female Workers by Race

	18-19 Years			20-24 Years			25-34 Years			35-44 Years			45-54 Years			55-64 Years		
	Black	White	B/W Ratios	Black	White	B/W Ratios	Black	White	B/W Ratios	Black	White	B/W Ratios	Black	White	B/W Ratios	Black	White	B/W Ratios
1955	21.4	7.7	2.8	13.0	5.1	2.5	10.2	4.3	2.4	5.5	3.8	1.4	5.2	3.4	1.4	5.5	2.2	2.5
1965	27.8	13.4	2.1	13.7	6.3	2.1	8.2	4.8	1.8	7.6	4.1	1.9	4.4	3.0	1.5	3.9	2.7	1.4
1975	38.5	16.1	2.4	22.5	11.2	2.0	12.9	8.5	1.5	8.6	6.6	1.3	6.7	5.8	1.2	5.3	5.1	1.0
1982	49.8	15.7	2.5	25.2	11.1	2.3	16.0	8.3	2.0	12.1	7.5	1.6	9.0	5.9	1.5	6.6	5.5	1.1
1983	56.1	14.9	3.8	32.5	9.6	3.4	18.6	7.1	2.6	10.1	5.2	2.0	9.7	5.0	2.0	7.8	4.0	2.0

Source: *Employment and Training Report of the President, 1982; Employment and Earning*, Bureau of Labor Statistics, November 1983.

Table 5. Labor Force Participation Rates of Males from 1955-1983 by Age and Race

	18-19 Years		20-24 Years		25-34 Years		35-44 Years		45-54 Years		55-64 Years	
	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White
1955	75.7	71.7	89.7	86.4	95.8	97.5	96.2	98.2	93.2	96.8	83.1	89.2
1965	66.7	65.8	89.8	85.3	95.7	97.4	94.2	97.7	92.0	95.9	78.8	85.2
1975	57.5	72.8	78.4	85.5	89.4	95.8	90.0	96.4	84.6	92.9	68.7	76.5
1983	50.2	69.3	77.1	85.0	87.1	95.4	90.7	96.0	83.9	92.0	63.5	69.9

Source: *Employment and Training Report of the President, 1982; Employment and Earning*, Bureau of Labor Statistics, November 1983.

Table 6. Labor Force Participation Rates of Females from 1955-1983 by Age and Race

	18-19 Years		20-24 Years		25-34 Years		35-44 Years		45-54 Years		55-64 Years	
Year	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White
1955	43.2	37.0	46.7	45.8	51.3	32.8	56.0	39.9	54.8	42.7	40.7	31.8
1965	40.0	36.6	55.2	49.2	54.0	36.3	55.9	44.3	60.2	49.9	48.9	40.3
1975	45.1	60.4	56.2	65.4	61.4	53.5	61.7	54.9	56.8	54.3	43.8	40.7
1983	41.4	61.5	57.6	72.8	72.4	69.9	73.9	69.1	61.8	63.4	45.5	41.7

Source: *Employment and Training Report of the President, 1982; Employment and Earning*, Bureau of Labor Statistics, November 1983.

additional year of schooling beyond elementary school does not net consistent, commensurate gains in employability for blacks. This is partly due to the differences in the types of jobs held by black and white workers.

Despite social and economic gains made during the 1960s, blacks still represent a disproportionately small share of the white collar work force. Furthermore, even in the service industries, blacks are still concentrated in the lower paying, lower status jobs within most occupations (Westcott, 1982). As Table 8 shows, employment in the professional and technical occupations grew rapidly between 1972 and 1980, with increased participation by men and women, black and white. However, white men were twice as likely as their black counterparts to hold professional and technical jobs, while black women made greater strides in closing the gap with white women in these fields. Similarly, while black participation in the managerial and administrative fields grew substantially, white men were nearly three times more likely, and white women more than twice as likely, to hold these types of jobs than their black counterparts.

Black men and women disproportionately increased their participation in the sales and clerical fields during this time period while that of whites declined (though remaining at a much higher level than blacks). Black men increased their participation in the skilled trades and decreased their participation in laborer jobs, but they were still twice as likely as their white counterparts to hold laborer and service worker jobs. Similarly, while black women were far less likely to hold jobs as private household workers in 1980 than in 1972, their participation rates in this job category remained more than three times greater than those of their white counterparts.

Table 9 shows that, while blacks increased their participation in professional and managerial occupations between 1972 and 1980, they were still concentrated in jobs at the lower end of the professional pay scale, such as nursing, technical trades, social and recreational work, and vocational and educational counseling (Westcott, 1982). Participation in some of the higher status professional occupations, such as accountants, computer specialists, engineers, and lawyers did increase, although it remained disproportionately low. Gains for black women in these fields were substantially greater than for black men.

Black men had the highest participation rates in jobs such as file clerks, mail handlers, cement workers, bus and cab drivers, construction laborers, garbage collectors, and cleaning service worker. Black women were disproportionately represented in jobs such as postal clerks, operatives in the clothing and textile fields, cleaning service workers, and private household workers. While upward occupational mobility was visible during the 1970s, black workers remained underrepresented in higher paying professional jobs and overrepresented in lower paying service and laborer jobs in 1980.

As mentioned previously, educational attainment plays a large role in determining employment chances as well as income possibilities. The next section presents educational attainment indicators and trends for black students in elementary, secondary, and higher education.

Table 7. Labor Force Status of Persons 25- to 64-Years-Old by Race, Hispanic Origin, and Years of School Completed, March 1982

Labor Force Status and Years of School Completed		Men			Women		
		White	Black	Hispanic	White	Black	Hispanic
Population, total		46,452	5,076	2,815	49,027	6,353	3,243
Elementary:	8 years or less	4,728	960	1,038	4,339	999	1,238
High school:	1 to 3 years	5,222	996	371	5,891	1,460	484
	4 years only	16,974	1,791	758	22,632	2,383	970
College:	1 to 3 years	7,921	818	374	8,183	934	333
	4 years or more	11,607	512	277	7,983	597	217
Labor force, total		41,810	4,196	2,564	29,822	4,122	1,708
Elementary:	8 years or less	3,538	543	895	1,581	413	462
High school:	1 to 3 years	4,394	797	328	2,850	783	234
	4 years only	15,492	1,538	727	13,941	1,643	516
College:	1 to 3 years	7,294	733	359	5,474	753	233
	4 years or more	11,092	483	255	5,975	533	162
Labor force participation rate		90.0	82.7	91.1	60.8	64.9	52.7
Elementary:	8 years or less	74.8	67.0	86.4	36.4	41.3	37.3
High school:	1 to 3 years	84.1	80.0	88.4	48.4	53.6	43.3
	4 years only	91.3	85.9	95.9	61.6	69.5	63.5
College:	1 to 3 years	92.1	89.6	96.0	66.9	80.6	70.0
	4 years or more	95.6	94.3	92.1	75.8	89.3	74.7
Unemployment rate		7.2	15.0	10.5	6.4	12.8	11.1
Elementary:	8 years or less	12.2	17.3	13.4	14.5	11.4	18.0
High school:	1 to 3 years	12.6	12.9	14.3	10.4	15.1	18.4
	4 years only	8.3	17.3	8.8	6.8	15.6	7.0
College:	1 to 3 years	6.0	14.6	7.8	4.6	10.6	5.6
	4 years or more	2.6	8.9	4.7	3.1	5.4	4.9

Source: Ann McDougall Young, "Recent Trends in Higher Education and Labor Force Activity," *Monthly Labor Review*, February 1983, p. 40.

Note: Because of rounding, sums of individual items may not equal totals.

Table 8. Percent Distribution of Employed Persons by Occupation, Race, and Sex, 1972 and 1980

Occupation	Black Men		White Men		Black Women		White Women	
	1972	1980	1972	1980	1972	1980	1972	1980
Total Employed	4,347	4,704	45,769	5,033	3,406	4,394	27,305	36,043
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional and technical	6.4	8.2	14.3	16.1	10.6	13.8	14.9	17.0
Managers and administrators	4.0	5.6	14.0	15.3	2.1	3.4	4.8	7.4
Sales	1.7	2.5	6.6	6.4	2.5	2.8	7.8	7.3
Clerical	7.6	8.4	6.8	6.2	22.7	29.3	36.2	36.0
Craft and kindred workers	14.8	17.6	21.2	21.5	.9	1.4	1.3	1.9
Operatives, except transport	17.4	15.5	12.1	10.7	14.8	13.8	12.5	9.4
Transport equipment operatives	10.3	9.9	5.7	5.4	.4	.7	.4	.7
Nonfarm laborers	17.4	13.0	6.8	6.5	.9	1.4	.9	1.2
Farm and farm managers	1.0	.4	3.4	2.6	—	—	.4	.4
Farm laborers and foremen	3.5	2.4	1.7	1.5	1.1	.5	1.5	1.3
Private household workers	.3	.1	—	—	16.4	7.4	3.0	1.9
Other service workers	15.8	16.4	7.3	7.9	27.6	25.4	16.2	16.0

Source: Diane Nilsen Westcott, "Blacks in the 1970s: Did They Scale the Job Ladder?," *Monthly Labor Review*, June 1982, p. 30.

Table 9. Employed Blacks as a Percentage of All Employed Men and Women in Selected Detailed Occupations, 1972 and 1980 Annual Averages

Occupation	Black Men		Black Women	
	1972	1980	1972	1980
Total	8.6	8.4	11.0	10.6
Professional and technical	4.0	4.4	8.0	8.8
Accountants	2.1	3.6	5.2	7.4
Computer specialists	3.5	4.1	6.5	9.3
Engineers	1.4	2.2	(1)	(1)
Personnel and labor relations	6.1	7.9	12.5	10.8
Physicians, dentists, and related practitioners	2.1	2.1	(1)	5.0
Nurses, dieticians, therapists	8.6	13.2	6.1	8.2
Health technologists and technicians	12.4	8.4	7.8	9.2
Lawyers and judges	1.3	3.1	(1)	7.1
Religious workers	10.0	5.7	(1)	(1)
Social and recreation workers	13.8	16.4	17.4	17.4
Teachers, college and university	3.6	3.3	5.4	5.3
Teachers, except college and university	7.0	5.5	9.0	10.2
Engineering and science technicians	3.5	5.6	(1)	6.7
Vocational and educational counselors	9.0	15.2	13.4	17.8
Writers, artists, and entertainers	4.2	4.1	2.8	3.6
Managers and administrators	2.6	3.2	5.0	5.2
Bank officials and financial managers	(1)	2.6	(1)	4.6
Restaurant, cafeteria, and bar managers	4.8	5.7	10.6	7.9
School administrators, elementary and secondary	6.7	6.0	6.9	12.2
Sales	2.4	3.5	3.8	4.4
Insurance agents, brokers, and underwriters	2.3	4.3	7.8	8.2
Sales clerks, retail trade	4.2	7.0	4.1	5.0
Clerical	9.5	10.9	7.2	8.9
Bank tellers	(1)	10.3	4.0	5.9
Bookkeepers	3.7	6.7	2.4	3.4
Cashiers	7.5	8.7	6.5	8.6
Counter clerks, except food	4.7	5.4	6.2	8.6
Estimators and investigators	2.5	6.0	7.3	11.7
File clerks	22.0	25.6	16.0	18.2
Library attendants and assistants	(1)	(1)	8.7	8.5
Mail carriers, post office	13.1	11.6	(1)	(1)
Mail handlers, except post office	25.0	22.1	12.5	17.9
Messengers and office helpers	16.4	16.9	(1)	(1)
Office machine operators	9.8	14.0	11.9	15.1
Postal clerks	16.0	14.8	26.7	32.7
Receptionists	(1)	(1)	6.4	6.4
Secretaries	(1)	12.1	4.4	5.5
Shipping and receiving clerks	13.0	13.1	13.4	8.3
Statistical clerks	8.0	11.8	7.1	11.3
Stock clerks and storekeepers	12.2	10.5	10.3	11.0
Teachers aides	(1)	(1)	21.2	17.3
Telephone operators	(1)	(1)	(1)	14.8
Typists	(1)	(1)	10.9	13.2
Craft and kindred workers	6.2	7.0	8.0	8.1
Carpenters	5.1	4.4	(1)	(1)
Brickmasons and stonemasons	13.6	14.6	(1)	(1)
Bulldozer operators	13.6	11.7	(1)	(1)
Cement and concrete finishers	33.3	31.0	(1)	(1)
Electricians	2.8	4.1	(1)	(1)
Excavating, grading and road machinery operators	6.6	8.2	(1)	(1)
Painters, construction and maintenance	9.3	10.5	(1)	(1)
Plumbers and pipe fitters	5.1	8.5	(1)	(1)
Machinists and jobsetters	5.6	6.3	(1)	(1)
Metal craftsmen, except mechanical, machinery, and jobsetters	4.9	6.2	(1)	(1)
Mechanics, automotive	7.4	7.7	(1)	(1)
Mechanics, except automotive	4.5	6.1	(1)	8.9
Printing craftsmen	4.5	7.3	8.5	8.6
Cranesmen, derrickmen, hoistmen	15.5	16.3	(1)	(1)
Operatives, except transport	11.9	11.7	12.7	14.6
Assemblers	13.3	11.2	11.8	11.9
Checkers, examiners, and inspectors (manufacturing)	7.6	9.6	9.3	10.8
Clothing ironers and pressers	28.9	(1)	38.4	40.4
Furnacemen, smeltermen, and pourers	23.9	25.4	(1)	(1)
Garage workers and gas station attendants	7.3	7.9	(1)	(1)
Laundry and drycleaning operators	24.0	21.9	28.7	23.3
Meatcutters and butchers	9.4	8.5	19.4	18.6
Packers and wrappers	12.6	20.4	13.4	15.4
Painters, manufacturing articles	14.5	10.7	(1)	(1)
Precision machine operators	6.9	6.7	10.3	18.2
Punch and stamping pressmen	10.5	11.0	11.6	9.1
Sawyers	19.1	17.4	(1)	(1)
Sewers and stitchers	(1)	14.3	11.3	13.8
Textile operatives	18.9	22.1	12.4	20.7
Welders and flamecutters	9.4	9.8	(1)	(1)
Transport equipment operatives	14.5	14.7	9.0	11.2
Busdrivers	21.7	24.0	7.0	13.1
Deliverypersons and routepersons	10.0	9.2	(1)	5.1
Forklift and tow motor operators	21.7	18.8	(1)	(1)
Taxicab drivers and chauffeurs	22.5	24.0	(1)	(1)
Truck drivers	13.9	13.5	(1)	7.3
Laborers, except farm	19.2	15.5	12.0	12.2
Construction laborers	24.7	15.4	(1)	(1)
Freight and material handlers	21.7	17.5	17.8	19.7
Garbage collectors	33.3	32.8	(1)	(1)
Gardeners and groundskeepers	16.5	14.1	(1)	(1)
Stockhandlers	8.8	10.4	10.7	10.0
Vehicle washers and equipment cleaners	21.9	18.4	(1)	(1)
Farm and farm managers	2.6	1.6	3.0	(1)
Farmers (owners and tenants)	2.6	1.6	3.0	(1)
Farm laborers and foremen	16.1	12.7	8.1	7.0
Farm laborers, wage workers	19.3	14.3	23.5	15.7
Service workers, except private household	16.8	15.7	17.3	15.9
Cleaning service workers	25.4	22.8	35.3	30.2
Food service workers	12.8	11.5	11.2	10.1
Health service workers	24.5	32.1	23.7	21.0
Personal service workers	13.9	15.0	11.2	12.6
Protective service workers	9.2	9.8	16.9	17.4
Private household workers	(1)	(1)	39.8	31.9
Child care	(1)	(1)	8.0	7.0
Maids and servants	(1)	(1)	71.1	52.5

[1] Data not shown where numerator is less than 4,000 or denominator is less than 25,000.

Source: Diane Nilsen Westcott, "Blacks in the 1970s: Did They Scale the Job Ladder?," *Monthly Labor Review*, June 1982, p. 32.

Educational Status

Over the course of this century, educational attainment has increased for all segments of the U.S. population, with each succeeding age group completing more years of schooling. Table 10 shows that for whites, blacks, and Hispanics greater percentages of each succeeding generation have completed high school. The same trend generally is true for college attendance, except that those 25 to 29 years of age, who normally would have been attending college during the 1970s, had lower college completion rates in all racial/ethnic groups than those in the 30- to 34-year-old group. This suggests that the gains made during the 1960s in higher education participation have been slightly eroded.

Although blacks have made great strides in closing the gap with whites with respect to high school graduation, those in the 25- to 29-year-old group were only half as likely as their white counterparts to have completed college in 1980, with proportions of 12 and 24 percent, respectively. Table 11 shows that in 1980, smaller proportions of the 18- to 24-year-old population, as well as smaller proportions of the pool of high school graduates, were enrolled in college than in 1975. The decrease was a proportionately larger one for blacks and Hispanics than for whites, re-establishing the gap that had nearly closed in 1975.

While 28 percent of black high school graduates between 18 and 24 years of age were enrolled in college in 1980 (as compared to 32 percent for white high school graduates), only 19 percent of the total 18- to 24-year-old black population were enrolled in college, as compared to 27 percent of their white counterparts. The difference in the two types of statistics is, essentially, the high school dropout rate. Table 12 indicates that the dropout rate for persons 14 to 34 years of age declined between 1971 and 1981 for both blacks and whites—from 15 to 12 percent for whites, and from 26 to 18 percent for blacks. However, the dropout rates for 14- and 15-year-olds actually increased over this period of time, from 1.3 to 1.8 percent for whites, and from 1.6 to 2.9 percent for blacks. The steepest increase was for black females in this age category. White and black dropout rates were virtually identical for 16- and 17-year-olds in 1981 (about 8 percent), but were much higher for blacks in the 18- to 34-year-old category (about 20 percent as compared to about 14 percent for whites).

Participation in Higher Education

Trends in higher education participation of blacks generally showed improvement during the first half of the 1970s,

Table 10. Educational Attainment of Racial/Ethnic Groups, by Age Group: March 1980

Age	*Population in Thousands*	*Percent High School Graduates*[1]	*Percent College Graduates*[2]
White:			
25 years old and over	112,899	70.5	17.8
25 to 29 years old	15,914	87.0	23.7
30 to 34 years old	14,644	86.7	27.1
35 to 39 years old	12,084	81.8	23.4
40 to 44 years old	10,076	77.9	20.3
45 to 49 years old	9,639	73.7	17.3
50 to 54 years old	10,280	69.0	15.4
55 to 59 years old	10,122	67.2	13.3
60 to 64 years old	8,695	59.6	11.0
65 to 69 years old	7,651	48.9	9.6
70 to 74 years old	5,922	44.3	9.6
75 years old and over	7,873	35.8	8.0
Black:			
25 years old and over	12,613	51.2	7.9
25 to 29 years old	2,079	76.9	11.7
30 to 34 years old	1,753	74.4	13.7
35 to 39 years old	1,444	67.1	10.1
40 to 44 years old	1,229	58.9	5.9
45 to 49 years old	1,147	46.2	7.6
50 to 54 years old	1,122	38.1	6.9
55 to 59 years old	993	34.0	4.6
60 to 64 years old	828	26.1	2.6
65 to 69 years old	823	22.0	4.1
70 to 74 years old	538	20.4	3.6
75 years old and over	658	10.0	1.6
Hispanic[3]:			
25 years old and over	5,896	45.3	7.9
25 to 29 years old	1,185	58.5	7.8
30 to 34 years old	1,001	55.3	10.6
35 to 39 years old	750	50.3	9.6
40 to 44 years old	721	48.3	8.5
45 to 49 years old	547	42.2	8.8
50 to 54 years old	499	35.7	6.2
55 to 59 years old	372	27.5	4.3
60 to 64 years old	259	31.7	5.7
65 to 69 years old	240	26.0	7.6
70 to 74 years old	143	14.0	2.5
75 years old and over	180	10.6	2.5

1. Completed 4 years of high school or more.
2. Completed 4 years or more of college.
3. Persons of Hispanic origin may be of any race and may be included in the white and black counts.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, March 1980, unpublished tabulations.

Table 11. Population, High School Graduates, and College Enrollment of 18- to 24-Year-Olds, by Racial/Ethnic Group: 1970, 1975, and 1980

Racial/Ethnic Group and Year	Population	High School Graduates	College Enrollment	High School Graduates as a Percent of Population	College Enrollment as a Percent of Population	College Enrollment as a Percent of High School Graduates
	Numbers in Thousands			Percent		
White						
1970	19,608	15,960	5,305	81.4	27.1	33.2
1975	22,7[illegible]	18,883	6,116	83.2	26.9	32.4
1980	23,975	19,787	6,334	82.5	26.4	32.0
Black						
1970	2,692	1,602	416	59.5	15.5	26.0
1975	3,213	2,081	665	64.8	20.7	32.0
1980	3,555	2,479	688	69.7	19.4	27.8
Hispanic						
1970	—	—	—	—	—	—
1975	1,446	832	295	57.5	20.4	35.4
1980	1,962	1,054	315	53.7	16.1	29.9

Source: U.S. Department of Commerce, *Current Population Report*, "School Enrollment—Social and Economic Characteristics of Students," Series P-20, Nos. 222, 303, 362.

Table 12. Percentage of High School Dropouts Among Persons 14- to 34-Years-Old, by Age, Race, and Sex: United States, October 1971 and October 1981

Race and Sex	Total, 14 to 34 Years	14 and 15 Years	16 and 17 Years	18 and 19 Years	20 and 21 Years	22 to 24 Years	25 to 29 Years	30 to 34 Years
1	2	3	4	5	6	7	8	9
October 1971								
All races:								
Total	16.4	1.4	7.8	15.3	17.0	18.3	21.4	25.3
Male	15.7	1.3	6.8	15.7	17.3	17.3	20.7	24.6
Female	16.9	1.5	8.8	14.9	16.6	19.1	22.0	26.0
White:								
Total	15.1	1.3	7.5	14.0	15.0	16.5	19.5	23.5
Male	14.3	1.1	6.4	14.2	14.8	15.2	18.8	22.8
Female	15.8	1.5	8.5	13.8	15.2	17.7	20.4	24.1
Black:								
Total	25.9	1.6	9.3	24.1	29.8	31.7	36.9	40.6
Male	27.0	2.3	9.4	26.0	34.9	33.7	38.4	41.3
Female	24.9	1.0	9.2	22.5	25.8	30.0	35.5	40.0
October 1981								
All races:								
Total	12.8	2.0	7.8	16.0	15.8	15.2	13.8	13.9
Male	13.1	1.8	8.0	17.7	17.4	16.7	14.0	13.0
Female	12.5	2.2	7.6	14.4	14.3	13.8	13.6	14.7
White:								
Total	12.1	1.8	7.8	15.5	14.6	14.2	12.9	13.0
Male	12.6	1.6	8.1	17.9	16.5	15.1	13.2	12.4
Female	11.6	2.0	7.5	13.2	12.8	13.2	12.6	13.6
Black:								
Total	17.9	2.9	8.0	19.3	23.3	22.4	20.5	21.2
Male	18.0	2.7	7.2	18.9	24.1	28.4	20.5	19.3
Female	17.7	3.0	8.7	19.7	22.6	17.5	20.5	22.6

Source: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, Nos. 241 and 373.

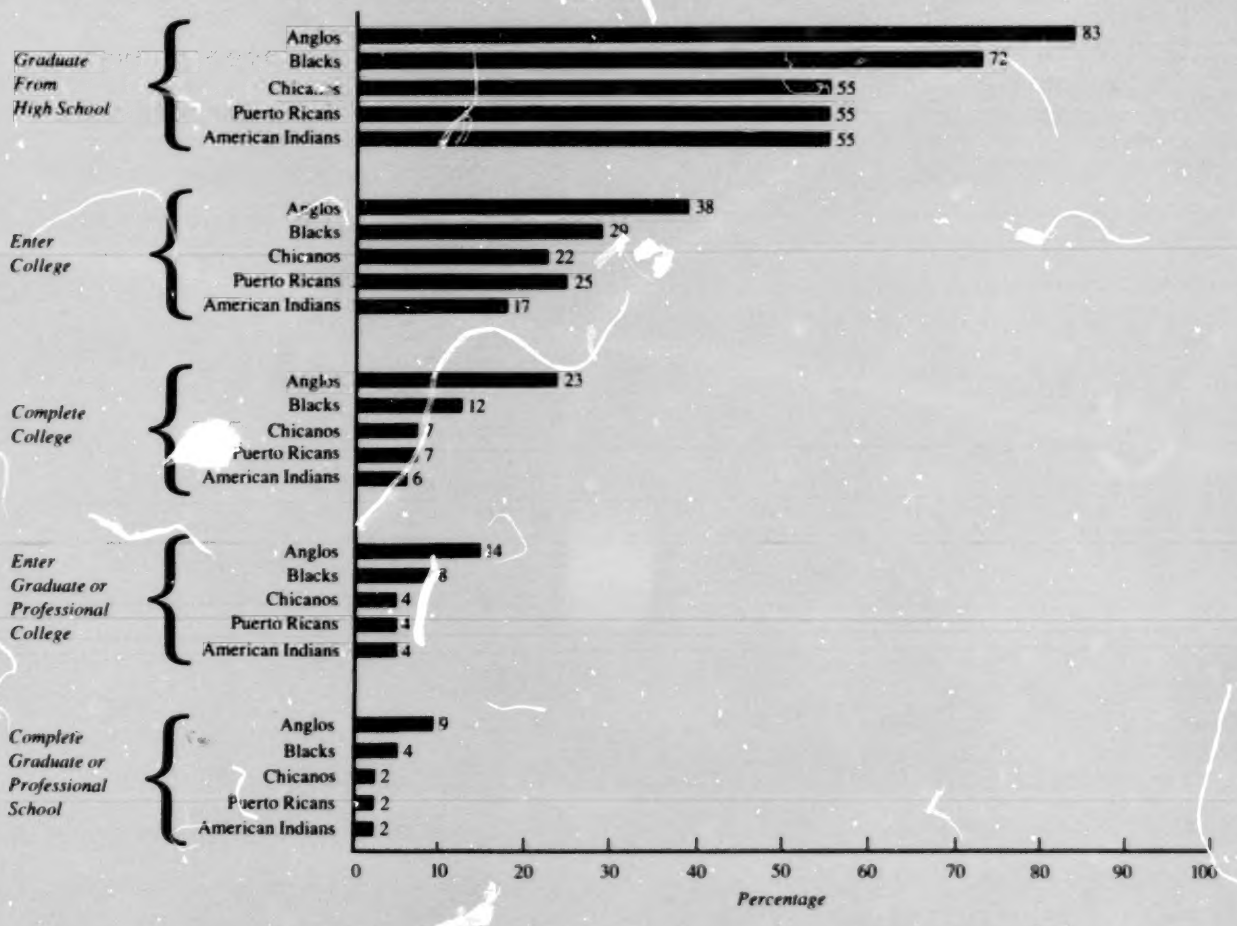
when federal policies aimed at reducing barriers for minorities and low-income students were enacted or expanded. However, these gains were somewhat eroded during the last half of the decade when federal aid leveled off and economic recession set in. By 1975, the proportion of black high school graduates enrolling in college was the same as that for whites (although high school graduation rates were still lower for blacks than for whites). After 1975, the number of blacks that enrolled in college each year remained about the same, even though the number of black youth eligible for college increased by almost 20 percent (NCES, 1983b).

In the first half of the 1970s, black enrollment grew to 10 percent of full-time undergraduates, about the same proportion they comprised of all high school graduates 18 to 24 years of age. However, by 1976 there were proportionately fewer blacks in graduate and first professional schools than there had been in the early 1970s. During the last half of the decade, the number and proportion of degrees awarded to blacks remained about the same at the bachelor's, doctoral, and first professional levels, while there was a 16 percent decline in the number of blacks receiving master's degrees, four times greater than the decline for non-blacks (NCES, 1983b).

The total number of degrees awarded to blacks did not change substantially at most levels, but the distribution of degrees changed in at least two ways: (1) black women increased their share of degrees at all levels except the master's, while the number and proportion of degrees granted to black men declined fairly significantly; and (2) blacks became more similar to whites (and women became more similar to men) in the fields of study in which they received their degrees. In 1981, the ranking of the three most popular disciplines for bachelor's degree recipients were for the first time the same for blacks and non-blacks: business and management, education, and social sciences (NCES, 1983b).

The overall status of blacks and other minorities with respect to higher education participation at the beginning of the 1980s is well-displayed in Figure 2: the educational

Figure 2. The Educational Pipeline in the United States.



Source: Astin, Alexander, *Minorities in American Higher Education* (San Francisco: Jossey-Bass, 1982).

Table 13. Total Withdrawals (in Percent) of Those Entering College by the Fall of 1973: By Sex and Race

	Male			Female		
	Black	*Hispanic*	*White*	*Black*	*Hispanic*	*White*
Four-Year College	27.03	27.90	22.66	27.40	21.20	23.9
Academic Withdrawal	5.88	4.45	6.18	6.76	4.81	3.9
Nonacademic	21.15	23.45	16.47	20.64	16.39	19.9
N	294	88	2,769	453	75	247
Two-Year College	53.60	47.11	38.72*	43.77	43.36	37.8
Academic Withdrawal	6.28	12.67	6.33	6.85	6.06	4.5
Nonacademic	47.32	34.44	32.39*	36.92	38.30	33.2
N	145	110	1,405	214	100	1,238

*The percentage for blacks was significantly greater than that for whites ($Z > 2.33$, $p < .01$).

Source: National Center for Education Statistics, National Longitudinal Study, *Withdrawal from Institutions of Higher Education*, 1977.

pipeline in the United States. Minorities lose ground in comparison with their white counterparts at each successive stage of educational attainment—high school graduation, college entrance, college graduation, entrance into graduate school, and completion of graduate school. Relative to non-blacks, blacks have greater loss rates at each point in the educational pipeline except from the bachelor's to the master's degree. The cumulative effects of these loss rates can be seen in the fact that, in 1972, blacks represented 12.7 percent of all 18-year-olds, 10.5 percent of all high school graduates, 8.7 percent of all college freshmen, and, four years later, 6.5 percent of all graduates awarded bachelor's degrees. By 1979, blacks represented only about 4 percent of all professional and doctoral degree recipients (Berryman, 1983).

Although blacks have made gains over the last two decades, there is still a long way to go before equality will be reached. The following sections describe these trends in more detail.

Undergraduate Level Participation

In 1980, blacks represented about 10 percent of the 9.3 million undergraduate students enrolled in institutions of higher education in the United States, while comprising about 12.6 percent of the college-age cohort. This is a 25 percent increase from the 8 percent of full-time undergraduate students in 1972 who were black. Although traditionally black institutions enrolled more than half of black college students prior to the 1970s, by 1980 the proportion had decreased to about 27 percent.

Forty-two percent of black college students were enrolled in two-year colleges, and 34 percent of black full-time students were in such colleges as compared to 26 percent of non-black full-time students (NCES, 1983). While the proportions of white and black full-time students enrolled in public institutions were roughly similar (about three-fourths), whites were twice as likely as blacks to be enrolled in universities rather than four-year colleges (American Council on Education, 1983). The significance of these distributions is that four-year colleges, universities, and private institutions have more resources in most important areas of educational expenditures than do two-year and public colleges in which minorities tend to be concentrated (Astin, 1982). Furthermore, students in universities and four-year colleges are much more likely to complete their bachelor's degree than are students in two-year institutions (Astin, 1982).

Although blacks comprised 10 percent of the undergraduate college enrollment in 1980, they received only about 6.4 percent of bachelor's degrees awarded in the years 1976 through 1981. The proportion was about 5 percent of degrees awarded males for black men and nearly 8 percent of degrees awarded females for black women. Table 13 shows that, in a representative sample of those who had entered college by the fall of 1973, 27 percent of black students had withdrawn from four-year colleges by 1977 compared to about 23 percent of white students. Withdrawals from two-year colleges were substantially higher for black students than for whites; 54 percent of black men and 44 percent of black women withdrew as compared to 39 percent of white men and 38 percent of white women.

Most reasons for leaving college were nonacademic, and minorities were more apt to cite financial difficulties than whites. Students of all racial and ethnic groups who were receiving financial aid left college at a lower rate than those who received no aid. Table 14 shows that, while withdrawal rates from four-year colleges were similar for blacks and whites receiving financial aid (24 percent and 21 percent, respectively), black students who did not receive aid left at far higher rates (46 percent versus 29 percent for whites). More than two-thirds of black students without financial aid attending two-year colleges withdrew within two years, as compared to 44 percent of those receiving aid. Comparable figures for white students were 49 percent and 34 percent. Persistence rates also were related to socioeconomic status, educational aspirations, and tested academic ability (American Council on Education, 1983; Williams, 1979).

Table 14. Total Withdrawal Rate[1] for Two-Year and Four-Year College Students[2] and Graduation Rate for Two-Year College Students by Financial Aid Status, Academic Ability, Race, Educational Aspirations, and SES: 1974

Student Characteristic	Total Withdrawal Rate[3]								Graduation Rate for 2-Year College Students	
	4-Year College Students				2-Year College Students					
	Aided		Not Aided		Aided		Not Aided		Aided	Not Aided
Ability:										
Low	37.0	(26.5)	53.4	(44.9)	53.1	(40.6)	63.3	(54.8)	11.0	4.1
Middle	26.0	(19.6)	35.1	(27.7)	39.3	(33.7)	47.8	(40.9)	21.3	11.7
High	14.4	(11.1)	21.6	(17.2)	18.6	(15.1)	43.2	(37.7)	31.3	16.2
Race:										
White	20.9	(15.6)	29.0	(22.5)	34.0	(25.5)	49.1	(42.4)	25.5	12.2
Black	24.4	(18.4)	46.2	(37.5)	43.5	(33.5)	67.1	(58.0)	11.0	4.1
Educational aspirations:										
Vocational-technical school	73.3	(53.0)	79.9	(66.3)	62.8	(48.4)	79.5	(69.9)	13.1	5.1
2-year college	53.8	(45.3)	74.1	(51.8)	60.0	(44.4)	60.4	(51.7)	20.7	10.7
4-year college	25.8	(19.9)	30.9	(25.2)	34.5	(29.3)	41.8	(35.5)	24.2	11.3
Graduate school	14.9	(10.9)	20.2	(15.0)	21.6	(16.0)	36.0	(30.8)	22.7	15.7
Socioeconomic status (SES):										
Low	30.8	(22.8)	52.6	(43.0)	46.7	(38.7)	64.3	(56.3)	15.8	6.4
Middle	22.6	(16.7)	37.5	(30.2)	34.5	(29.3)	55.1	(46.6)	25.0	10.4
High	14.4	(10.9)	22.2	(16.4)	25.0	(17.3)	38.6	(33.3)	22.6	13.8

1. Percentage of those in a given enrollment and financial aid status who have withdrawn.
2. Includes those attending college in 1972 or 1973 but not in 1974.
3. Includes those who withdrew for academic and nonacademic reasons. Figures in parentheses are nonacademic withdrawal rates; subtracting these figures from the ones preceding them will give academic withdrawal rates for that subgroup.

Source: National Center for Education Statistics, *Students and Schools*, 1979, Table 3, 14.

The importance of financial aid for black students is apparent when one considers that in 1981, nearly half (48 percent) of black college-bound seniors came from families with incomes under $12,000, as compared to only about 10 percent of their white counterparts (College Board, 1982).

More recent data on 1980 seniors who entered college by 1981 (see Table 15) show that in the first year, persistence rates at the same institution were higher for four-year colleges than for two-year colleges (75 percent versus 59 percent). Blacks were more likely than whites to withdraw from four-year institutions (15 percent versus 9 percent), but slightly less likely to withdraw from two-year institutions (24 percent versus 27 percent). Although socioeconomic status (SES) and type of high school program directly affected persistence and withdrawal in four-year colleges—with high SES students and those who had taken academic programs being most likely to persist in the same institution—they had less effect on persistence in two-year colleges. Still, SES and high school program did affect withdrawal rates even in the two-year colleges.

Undergraduate Fields of Study

As Table 16 shows, between 1975-76 and 1980-81, both minorities and women increased their share of degrees granted in math- and science-related fields, while reducing their concentration in social sciences and education. The general patterns of shifts somewhat decreased disparities across the race and sex groups, but blacks and women still tended to be overrepresented in education and underrepresented in engineering, biological sciences, and physical sciences. Degree distributions for males across racial and ethnic groups were more similar to each other than they were to degree distributions for females, but women did show movement from traditional degree areas for females into more technical fields, and minorities became more similar to whites in their degree distributions (Trent, 1984).

As mentioned earlier, the proportion of blacks attending predominantly black colleges decreased during the 1970s; however, these colleges continued to award significant numbers of bachelor's degrees in selected fields. As Table 17 indicates, predominantly black colleges accounted for 40 percent of bachelor's degrees for blacks in 1975-76 and 34 percent in 1980-81. However, they granted over 40 percent of the degrees blacks received in agriculture, computer sciences, biology, mathematics, physical sciences, and social sciences, even in 1981. As Trent (1984, p. 302) notes: "These distributions reflect student choices and institutional offerings, as well as student and institutional characteristics that influence attainment. But they also represent access and retention. . . .Of equal importance, the change over five years--in biology and math, for example—indicates an increasing share of these degrees from [predominantly black colleges]."

Table 15. Percentage[a] of Two- and Four-Year College Entrants Who Had Persisted, Transferred, Completed Short-Term Programs, or Withdrawn, by Selected Student Characteristics: February 1982

Characteristics	4-Year College			2-Year College		
	Persister	Transfer	Completer/ Withdrawer[b]	Persister	Transfer	Completer/ Withdrawer[b]
All students	75	15[c]	10	59	16[d]	26
Racial/ethnic group:						
Hispanic	66	17	17	65	11	24
Black	71	14	15	61	15	24
White	75	15	9	57	16	27
Asian American	86	12	2	70	21	9
American Indian	81	11	9	61	21	18
Socioeconomic status (SES):						
High	77	17	7	59	21	20
Middle	75	14	11	59	15	26
Low	71	14	15	59	10	31
High school program:						
Academic	79	15	7	60	23	16
General	66	18	17	56	12	32
Vocational/technical	64	16	20	62	9	29

a. Percentages are based on those individuals who entered college before June 1981.

b. Students who had completed short-term programs (i.e., completers) and students who had left school without completing programs (i.e., withdrawers) were not differentiated in this table because the information needed for so doing was not available in the HS&B first follow-up survey.

c. Includes 10 percent 4-to-4-year college transfers and 5 percent 4-to-2-year college transfers.

d. Includes 8 percent 2-to-2-year college transfers and 8 percent 2-to-4-year college transfers.

Source: National Center for Education Statistics, High School and Beyond data base, *Two Years After High School: A Capsule Description of 1980 Seniors*, p. 9.

Table 16. Major Field Distributions in Percentages of Bachelor's Degrees Received in 1975-76 and 1980-81 by Race/Ethnicity and Sex

	Males						*Females*					
	Black		*Hispanic*		*White*		*Black*		*Hispanic*		*White*	
Major Field	*1975–76*	*1980–81*	*1975–76*	*1980–81*	*1975–76*	*1980–81*	*1975–76*	*1980–81*	*1975–76*	*1980–81*	*1975–76*	*1980–81*
Agriculture	1.0	1.0	1.3	1.7	3.4	3.4	.1	.3	.4	.6	.9	1.6
Architecture	1.0	.8	1.7	1.9	1.5	1.4	.1	.2	.3	.6	.4	.6
Area studies	.1	.1	.6	.4	.3	.2	.2	.2	.9	.6	.4	.5
Biological sciences	4.0	3.8	5.4	5.9	7.2	5.2	3.4	3.5	4.0	4.5	4.5	4.1
Business	23.0	26.5	19.7	23.7	23.0	27.6	10.9	19.0	6.0	14.1	6.2	15.7
Communications	2.2	3.9	2.9	2.4	2.5	3.1	2.0	3.9	1.9	2.7	2.2	3.8
Computer sciences	1.0	1.6	.7	1.8	.9	2.1	.4	1.0	.2	1.0	.2	.9
Education	14.5	10.5	9.3	7.0	8.2	5.6	31.7	19.0	24.3	10.9	27.1	17.9
Engineering	5.0	8.2	8.0	12.0	8.6	13.4	.2	1.0	.4	1.2	.3	1.6
Fine arts	3.0	3.3	3.4	3.2	3.2	3.1	2.9	3.0	4.0	3.9	6.4	5.9
Foreign languages	.4	.3	3.4	2.4	.7	.5	1.2	1.2	10.5	5.9	2.7	1.7
Health professions	1.0	1.8	2.4	2.4	2.3	2.3	6.9	9.0	8.5	8.1	10.4	12.0
Home economics	.2	.3	.0	.0	.1	.2	3.0	3.5	1.9	2.0	4.0	4.0
Law	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Letters	3.0	2.7	3.3	2.6	4.6	3.6	5.0	.0	4.9	3.8	7.1	5.0
Library science	.0	.0	.0	.0	.0	.0	.2	.2	.0	.0	.1	.8
Mathematics	1.0	1.1	1.5	1.0	1.9	1.3	1.3	1.3	1.2	.6	1.5	1.0
Military sciences	.1	.0	.1	.0	.2	.0	.0	.0	.0	.0	.0	.0
Physical sciences	2.0	2.5	2.2	2.7	3.6	4.0	.6	.6	.8	1.0	1.0	1.3
Psychology	4.0	4.2	6.3	4.5	4.5	3.0	6.1	6.3	7.9	7.4	6.4	5.7
Public affairs	8.0	7.0	5.0	5.5	3.7	3.1	5.5	5.6	3.8	5.3	3.2	4.3
Social sciences	22.0	15.0	19.1	14.3	15.2	11.9	15.6	12.3	13.8	12.1	10.8	9.0
Theology	1.0	.6	.4	.7	.8	1.0	.1	.1	.0	.1	.4	.3
Interdisciplinary	3.0	4.1	3.0	3.6	3.5	3.6	2.8	2.8	4.1	5.4	3.4	3.8
Total *N*	25,301	24,511	10,114	10,810	441,191	406,185	32,952	36,162	7,721	11,023	361,608	395,256

Source: William T. Trent, "Equity Considerations in Higher Education: Race and Sex Differences in Degree Attainment and Major Field from 1976 through 1981," *American Journal of Education*, May 1984.

Just as educational attainment influences employment and income, the field of study chosen also affects chances of employment and salary after graduation. Survey data from the National Center for Education Statistics show that, of recent bachelor's degree recipients who were in the labor market in 1981, the highest unemployment rates were in the fields of education, humanities, and social sciences—fields in which blacks' degrees were concentrated. The lowest unemployment rates were in business and management, health professions, and physical sciences, where, with the exception of business degrees, blacks were underrepresented (NCES, 1983a, p. 124). Average annual salaries of these recent graduates were highest in fields such as engineering, computer sciences, and the health professions where blacks were underrepresented and lowest in the fields of education and public affairs, where blacks had a much higher proportion of degrees (NCES, 1983a, p. 128).

Graduate Studies

The number of black full-time students enrolled at the graduate level has remained between about 21,000 and 22,000 since 1972. Black representation among full-time graduate students increased throughout the 1960s and early 1970s to 5.5 percent in 1974, but has declined to about 5 percent since that time. The number and percentage of black part-time graduate students also declined from 43,300 or 6.6 percent of total part-time students in 1976 to 37,800 or 5.8 percent in 1980. From 1972 to 1980, the number of black full-time students enrolled in first professional degree programs increased from 8,700 to 11,500, but blacks as a proportion of all first professional degree students decreased from a high of 4.9 percent in 1974 to 4.6 percent in 1980 (NCES, 1983).

Tables 18 through 20 show degrees granted to black students in master's, doctoral, and first professional degree programs between 1976 and 1981. The number and proportion of graduate degrees awarded to blacks increased between 1976 and 1981 at the doctoral level (from 3.6 to 3.9 percent) and increased numerically, but not proportionately, for first professional degrees (from 2,700 or 4.3 percent to 2,900 or 4.1 percent of all degrees). Blacks earning master's degrees declined in both numbers and share of all degrees, from 20,000 or 6.6 percent to 17,000 or 5.8 percent. Black women accounted for the increases in doctoral and first professional degrees, having increased their number of doctoral degrees by 29 percent and their number of first

Table 17. Distribution of Bachelor's Degrees Awarded to Blacks in 1975-76 and 1980-81 by Predominantly Black (PBC) and Predominantly White (PWC) Colleges for Each Major Field in the South and the Nation

	South						*Nation*					
	1975-76			*1980-81*			*1975-76*			*1980-81*		
	Total (N)	*PBC (%)*	*PWC (%)*	*Total (N)*	*PBC (%)*	*PWC (%)*	*Total (N)*	*PBC (%)*	*PWC (%)*	*Total (N)*	*PBC (%)*	*PWC (%)*
Agriculture	196	76.5	23.4	265	81.8	18.1	266	56.4	43.6	378	57.4	42.5
Architecture	73	60.2	39.7	136	48.5	50.0	253	18.1	81.8	300	22.0	78.0
Area studies	22	.0	100.0	13	.0	100.0	108	9	99.0	67	.0	100.0
Biological sciences	1,202	72.7	27.2	1,301	56.5	34.3	2,233	44.1	55.4	2,269	40.8	59.1
Business	5,838	73.8	26.1	7,699	61.7	38.3	9,442	49.6	50.3	13,325	38.9	61.0
Communications	446	38.5	61.4	1,183	47.8	52.1	1,232	14.8	85.1	2,399	24.2	75.7
Computer sciences	192	63.0	36.9	471	64.5	35.4	322	38.2	61.8	786	40.5	59.4
Education	9,325	74.1	25.8	6,518	62.9	37.1	14,095	54.8	45.1	9,471	48.3	51.6
Engineering	628	71.0	28.9	1,389	60.1	39.8	1,329	35.5	64.4	2,445	34.7	65.2
Fine arts	617	53.9	46.0	713	49.5	50.4	1,683	22.7	77.3	1,826	21.3	78.6
Foreign languages	181	58.0	41.9	82	35.3	64.6	511	23.2	76.7	283	8.8	91.1
Health professions	1,320	44.2	55.7	1,579	43.7	56.2	2,646	22.9	77.1	3,594	26.9	73.0
Home economics	643	69.8	30.1	670	61.4	38.5	1,053	43.2	56.7	1,124	37.8	62.1
Law	7	28.5	71.4	6	.0	100.0	26	7.6	92.3	20	.0	100.0
Letters	859	62.0	37.9	851	53.2	46.7	2,379	31.9	68.0	1,978	25.0	74.9
Library science	59	45.7	54.2	21	33.3	66.6	75	36.0	64.0	30	26.6	73.3
Mathematics	512	70.9	29.1	408	71.3	28.6	785	49.4	50.5	584	52.7	47.7
Military sciences	3	.0	100.0	3	100.0	.0	44	.0	100.0	6	50.0	50.0
Physical sciences	348	68.9	31.0	600	54.8	45.1	637	41.7	58.2	906	41.2	58.7
Psychology	1,086	56.9	43.0	1,427	48.0	51.9	3,133	25.4	74.5	3,332	18.0	81.9
Public affairs	1,513	55.8	44.1	2,367	50.9	49.0	3,283	29.0	71.0	4,839	27.1	72.8
Social sciences	5,160	69.2	30.7	3,280	67.3	32.6	10,743	36.6	63.3	8,091	29.9	70.0
Theology	97	76.2	23.7	108	60.1	39.8	148	52.0	47.9	166	40.3	59.6
Interdisciplinary	397	20.9	79.0	384	22.9	77.0	1,751	12.7	87.2	2,191	9.8	90.1
Overall		67.9	32.1		58.8	41.2		40.2	59.8		33.7	66.3

Source: William T. Trent, "Equity Considerations in Higher Education: Race and Sex Differences in Degree Attainment and Major Field from 1976 through 1981," *American Journal of Education*, May 1984.

Table 18. Master's Degrees Awarded to Blacks by Discipline Division: 1976, 1979, and 1981

Discipline Division	1976 Blacks	1976 Percent of Total	1979 Blacks	1979 Percent of Total	1981 Blacks	1981 Percent of Total
Total	20,345	6.6	19,393	6.5	17,153	5.8
Agriculture and natural resources	77	2.3	79	2.0	73	1.8
Architecture and environmental design	195	6.1	115	3.7	122	3.9
Area studies	26	2.9	15	2.0	14	1.9
Biological sciences	215	3.3	217	3.2	171	2.9
Business and management	1,549	3.7	2,129	4.3	2,359	4.1
Communications	170	5.5	149	5.2	187	6.0
Computer and information sciences	60	2.4	65	2.2	70	1.7
Education	12,434	9.7	10,825	9.7	8,645	8.8
Engineering	233	1.5	241	1.6	260	1.6
Fine and applied arts	277	3.2	254	3.0	267	3.1
Foreign languages	119	3.4	45	1.9	33	1.6
Health professions	622	5.0	801	5.2	889	5.4
Home economics	104	4.9	121	4.8	132	5.1
Law	37	2.6	27	1.6	38	2.1
Letters	455	4.1	327	3.7	250	3.0
Library science	426	5.4	305	5.2	216	4.4
Mathematics	130	3.4	71	2.3	67	2.6
Military sciences	0	0	0	0	0	0
Physical sciences	137	2.5	86	1.6	107	2.0
Psychology	456	5.3	476	6.0	424	5.3
Public affairs and services	1,615	9.5	2,039	10.2	1,893	9.4
Social sciences	887	5.6	748	5.8	615	5.2
Theology	75	1.9	72	2.1	71	1.9
Interdisciplinary studies	110	3.0	186	4.1	230	5.1

Source: National Center for Education Statistics, *Participation of Black Students in Higher Education: A Statistical Profile from 1970-71 to 1980-81*, November 1983.

professional degrees by 71 percent over the six-year period. Doctoral degrees awarded to black men decreased by 10 percent and first professional degrees by 12 percent during the same period of time.

At the master's degree level, sharp decreases in the number and proportion of degrees for blacks occurred in a number of fields, including architecture, education, foreign languages, mathematics, and physical sciences. Sizable increases occurred in business and management, and the health professions. As a proportion of total degrees, blacks were best represented in public affairs (9.4 percent), education (8.8 percent), and business and management (6 percent), and least well-represented in agriculture, computer sciences, engineering, foreign languages, and theology where blacks' degrees were less than 2 percent of the total in each case.

At the doctoral level, business and management, biological sciences, psychology, public affairs, and theology degrees increased, while degrees in education and physical sciences declined. Degrees for blacks were concentrated in library science (12.7 percent of total degrees in that field), public affairs (12 percent), and education (7.8 percent). Blacks were least well-represented in the fields of agriculture, biological sciences, computer sciences, engineering, foreign languages, mathematics, and physical sciences, with less than 2 percent of all degrees in these areas.

First professional degrees remained about stable for blacks in most areas between 1976 and 1981, with substantial proportionate increases—although very small numbers—only in the fields of podiatry and veterinary medicine. Blacks' degrees were concentrated in medicine (5 percent of total degrees in the field), law (4.3 percent of the total, but over half of all blacks' first professional degrees), and theology (4.4 percent of the total).

Educational Outcomes and Fields of Study

In *Who Will Do Science?* Berryman (1983) analyzes trends in minority representation in the quantitative fields, including biological sciences, physical sciences, computer sciences, mathematics, and engineering. In an increasingly technological society, these are the skills areas in greatest demand, where salaries and employment chances are highest. Advancement in these fields is arguably a very important dimension of equality if, as many predict, the current demand portends changes in the structure of the economy and the skilled work force for decades to come.

Berryman's data show that the underrepresentation of

Table 19. Doctoral Degrees Awarded to Blacks by Discipline Division: 1976, 1979, and 1981

Discipline Division	1976		1979		1981	
	Blacks	Percent of Total	Blacks	Percent of Total	Blacks	Percent of Total
Total	1,213	3.6	1,267	3.9	1,265	3.9
Agriculture and natural resources	18	2.0	14	1.5	15	1.4
Architecture and environmental design	5	6.1	5	5.2	5	6.5
Area studies	9	5.1	12	9.0	6	3.8
Biological sciences	52	1.5	47	1.3	64	1.7
Business and management	17	1.8	18	2.1	32	3.8
Communications	8	3.8	10	5.2	10	5.5
Computer and information sciences	0	0	4	1.7	1	.4
Education	669	8.6	625	8.1	614	7.8
Engineering	19	.7	24	1.0	24	.9
Fine and applied arts	21	3.3	12	1.7	17	2.6
Foreign languages	8	.9	10	1.6	9	1.5
Health professions	16	2.8	20	2.8	26	3.1
Home economics	5	2.8	9	4.1	9	3.6
Law	0	0	2	4.3	1	1.7
Letters	53	2.6	71	3.7	56	3.1
Library science	4	5.6	2	2.9	9	12.7
Mathematics	9	1.1	13	1.8	9	1.2
Military sciences	0	0	0	0	0	0
Physical sciences	41	1.2	48	1.5	32	1.0
Psychology	66	2.6	111	4.2	116	3.9
Public affairs and services	29	9.1	31	8.4	52	12.0
Social sciences	117	2.8	132	3.9	100	3.9
Theology	26	2.9	32	2.7	45	3.8
Interdisciplinary studies	11	4.2	15	2.1	12	4.3

Source: National Center for Education Statistics, *Participation of Black Students in Higher Education: A Statistical Profile from 1970-71 to 1980-81*, November 1983.

Table 20. First Professional Degrees Awarded to Blacks by Discipline Division: 1976, 1979, and 1981

Discipline Division	1976		1979		1981	
	Blacks	Percent of Total	Blacks	Percent of Total	Blacks	Percent of Total
Total	2,694	4.3	2,836	4.1	2,929	4.1
Dentistry	181	3.3	180	3.3	195	3.6
Medicine	708	5.3	762	5.2	767	5.0
Optometry	14	1.4	12	1.1	9	.8
Osteopathic medicine	12	1.5	18	1.7	16	1.4
Pharmacy	6	1.4	16	2.5	20	3.0
Podiatry	3	.7	15	2.6	20	3.4
Veterinary medicine	18	1.2	37	2.2	37	1.9
Chiropractic medicine	26	1.6	7	.4	13	.6
Law, general	1,519	4.7	1,500	4.3	1,576	4.3
Theological professions	206	3.9	289	4.5	276	4.4
Other	1	3.3	0	0	0	0

Source: National Center for Education Statistics, *Participation of Black Students in Higher Education: A Statistical Profile from 1970-71 to 1980-81*, November 1983.

blacks in quantitative fields at the graduate school level is partly a function of their underrepresentation in advanced degree programs of any sort, but also is a function of field choices. She notes: "Blacks lose 'field' ground just as they lose attainment ground at several points in the process. At the B.A. level, the percent choosing quantitative fields is 60 percent of the national average; at the M.A. level, 40 percent; and at the Ph.D. level, 33 percent" (p. 5).

Two interrelated factors affect the choice of a quantitative major in college and thereafter. As Tables 21 and 22 show, higher tested achievement is related to the choice of a quantitative major in college and graduate school. Within each racial or ethnic group, students who choose majors in mathematics or scientific fields have higher mean Scholastic Aptitude Test (SAT) or Graduate Record Examination (GRE) scores than their same-race counterparts. These tables also show that test scores for blacks in 1980-81 averaged about 70 to 80 percent of white test scores across all fields of study. Table 23 shows that on the quantitative portion of the Graduate Record Examinations, the median score for blacks in 1981 was about 350, lower than any other racial or ethnic group, while the median score for whites was between 500 and 550. More encouraging is the fact that SAT scores for black college-bound seniors in 1982 showed substantial increases over 1977 scores on both the verbal and mathematical portions of the exam, while white students' scores—though remaining higher—declined over the same time period (see Table 24).

The second important factor affecting choice of college major is parental education, which also affects high school performance and postsecondary educational plans. Berryman (1983) found that "being second-generation college not only increases, but also equalizes, choice of quantitative majors across the white, black, American Indian, Chicano, and Puerto Rican subgroups. . . .[T]he equalization occurs when parental education shifts from no college to any college" (p. 10). Table 25 demonstrates this relationship. Dunteman et al. (1979) found a similar relationship between family socioeconomic status and the propensity of blacks to choose science majors, because of the effects of SES on parents' educational aspirations and high school mathematical achievement. They also found that persistence in the field of science is largely a function of major field choice in the freshman year. Thus factors affecting initial choice of college major have a strong influence on fields of study through the advanced degrees.

The importance of early academic training and encouragement on later career choices cannot be overestimated. Berryman found that "the scientific/mathematical pool from which quantitative Ph.D. graduates ultimately derive first appears in elementary school. It emerges strongly before the 9th grade and is essentially complete by the 12th. The pool appears to reach its maximum size prior

Table 21. SAT Test Scores of High School Seniors by Racial or Ethnic Group and Anticipated Major in College

	Mean Composite SAT				
	Whites	*Blacks*	*Chicanos*	*Puerto Ricans*	*American Indians*
Arts and humanities	930	732	845	831	808
Education	884	632	751	738	755
Social sciences	1,029	735	866	796	839
Business	950	695	807	814	798
Allied health fields	958	710	846	800	868
Biological sciences	1,066	807	921	897	855
Engineering	1,109	848	1,018	918	969
Physical sciences and mathematics	1,142	845	1,016	915	979

Source: Alexander W. Astin, *Minorities in American Higher Education*, San Francisco: Jossey-Bass, 1982, p. 70.

Table 22. 1980-81 Combined Verbal and Quantitative Graduate Record Examination Scores by Expected Graduate Fields and Race and Ethnicity

Expected Graduate Field	*Total*	*White*	*Black*	*Mexican American*	*Puerto Rican*	*American Indian*	*Asian American*
Total	1,015	1,039	733	847	801	925	1,054
Arts	979	992	733	820	739	882	997
Other humanities	1,049	1,064	774	85.	784	969	1,026
Education	900	929	661	751	718	808	924
Behavioral sciences	1,030	1,055	765	902	804	933	1,054
Health fields	995	1,015	774	882	798	903	1,032
Biological sciences	1,093	1,110	822	1,013	798	1,001	1,102
Engineering	1,184	1,202	964	1,063	965	1,111	1,126
Mathematics	1,182	1,208	834	1,044	923	1,129	1,104
Physical sciences	1,162	1,170	884	985	885	1,140	1,163

Source: Marlene B. Good[illegible], *A Summary of Data Collected from Graduate Record Examinations Test-Takers During 1980-81*. Princeton: Educational Testing Service, May 1982, pp. 74-77 and 79-80.

Table 23. Distributions of GRE Aptitude Test Quantitative Scores by Ethnic Group (U.S. Citizens Only)

	Percent of Group Below Score									
Score	American Indian	Black/ Afroamerican	Mexican American	Oriental or Asian	Puerto Rican	Other Hispanic/ Latin American	White	Other	No Response	Total
800*	99.5	100.0	100.0	98.3	100.0	99.7	99.2	99.3	98.8	99.3
750	98.4	99.8	99.3	92.6	99.7	98.7	96.1	95.7	94.9	96.3
700	94.4	99.4	97.9	81.5	98.4	95.7	90.0	88.2	87.7	90.6
650	90.7	98.5	94.6	68.4	95.6	90.0	81.7	80.4	78.5	82.7
600	83.0	96.6	89.1	53.8	91.2	81.4	70.1	68.4	66.2	71.9
550	72.0	93.1	81.4	38.5	84.5	71.5	56.0	54.1	52.5	58.6
500	59.8	87.3	70.8	26.5	74.0	58.4	40.7	39.1	39.6	44.2
450	46.2	78.4	58.4	15.7	58.7	45.2	26.1	25.5	26.5	30.1
400	32.9	64.8	43.8	8.9	43.9	31.3	14.4	15.3	16.4	18.4
350	19.6	49.4	31.1	5.2	29.7	18.7	7.2	8.5	9.8	10.5
300	10.4	30.4	15.5	1.8	16.5	9.7	2.7	3.8	4.6	4.8
250	4.2	13.8	6.0	0.4	7.5	3.5	0.7	1.2	1.8	1.7
200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
N	1,096	11,133	2,150	2,940	1,282	1,437	148,513	3,339	6,567	178,457

*Theoretical maximum score is 900.

Source: Marlene B. Goodison, *A Summary of Data Collected from Graduate Record Examinations Test-Takers During 1980-81.* Princeton: Educational Testing Service, 1982.

to senior high school and subsequently declines in size through graduate school" (1983, p. 6). These results strongly suggest that the kind and quality of early school preparation are critical to later career choice. In the next section, educational programs and outcomes in elementary and secondary education are examined.

Indicators of K-12 Attainment

Educational Performance

The educational performance of black students in elementary and secondary school, as measured by standardized achievement test scores, rose in many areas over the decade of the 1970s, although it remained lower than that of other racial and ethnic groups by 1980. The progress of young black students is the most encouraging, particularly those from urban, disadvantaged communities and from southeastern states. These students made larger gains in reading and mathematics scores on the National Assessment of Educational Progress (NAEP) tests than did non-black students, beginning to close the large gap that has existed in the past. The notable progress of black children in the southeast, where their education has long been underfunded, led the former director of NAEP to hypothesize that federal intervention in the form of compensatory education funds (primarily the former Elementary and Secondary Education Act (ESEA), Title I) was showing concrete payoffs (Forbes, 1981).

Tables 26 and 27 show these trends in reading scores. Between 1971 and 1980, black 9-year-olds increased their average percentage of correct responses by nearly 10 points (as compared to a three-point gain for white 9-year-olds), while black 13-year-olds gained four percentage points on

Table 24. Scholastic Aptitude Test (SAT) Scores for College-Bound Seniors by Race and Ethnicity and Year

Racial and Ethnic Group	Verbal		Mathematical	
	1977[a]	1982[b]	1977[a]	1982[b]
Whites	449	444	490	483
Blacks	329	341	355	366
Chicanos	374	379	412	416
Puerto Ricans	NA	360	NA	403
Asian Americans	NA	390	NA	513

a. Source: Robert L. Jacobsen, "Blacks Lag in SAT Scores," *The Chronicle of Higher Education*, January 7, 1980, Vol. 19, No. 16, p. 5.

b. *Los Angeles Times*, Part I, October 14, 1982, p. 4.

Table 25. Percent of First and Second Generation 1981 College Freshmen Choosing Quantitative College Majors by Race and Ethnicity

	Percent Quantitative Majors	
Racial and Ethnic Group	First Generation College Freshmen	Second Generation College Freshmen
White	17.2	21.8
Black	12.0	19.5
American Indian	12.9	19.0
Chicano	15.2	20.8
Puerto Rican	12.1	22.0
Asian American	41.2	40.2
All	16.7	21.9

Source: Sue E. Berryman, *Who Will Do Science?*, The Rockefeller Foundation, 1983.

Table 26. Mean Reading Performance of 9-, 13-, and 17-Year-Olds, by Sex, Race, Type of Community, and Parental Education: 1971 and 1980

Item	9-Year-Olds			13-Year-Olds			17-Year-Olds		
	Mean Percent Correct		Change 1971 to 1980	Mean Percent Correct		Change 1971 to 1980	Mean Percent Correct		Change 1971 to 1980
	1971	1980		1971	1980		1971	1980	
Sex:									
Male	61.65	66.05	4.40	57.75	58.84	1.09	67.17	66.86	−0.31
Female	66.28	69.74	3.46	62.29	62.61	0.32	70.65	69.66	−0.99
Race:									
White	66.44	69.26	2.82	62.60	62.64	0.04	71.24	70.57	−0.67
Black	49.70	59.57	9.87	45.44	49.61	4.17	51.68	52.20	0.52
Type of community:									
Rural	60.89	66.93	6.04	56.82	58.65	1.83	66.17	65.08	−1.09
Urban, disadvantaged[1]	52.76	57.96	5.20	49.83	53.40	3.57	60.68	59.24	−1.44
Urban, advantaged[2]	71.57	73.14	1.57	67.14	67.93	0.79	75.75	73.53	−2.22
Parental education[3]:									
Less than 4 years of high school	56.75	60.78	4.03	52.70	52.88	0.18	60.50	59.20	−1.30
4 years of high school	64.69	67.12	2.43	60.40	59.52	−0.88	68.20	65.63	−2.57
More than 4 years of high school	70.08	71.53	1.45	66.42	65.44	−0.98	74.81	73.08	−1.75

1. Cities having a population greater than 200,000 where a high proportion of the residents are on welfare or are not regularly employed.
2. Cities having a population greater than 200,000 where a high proportion of the residents are in professional or managerial positions.
3. Parental education levels are: (1) those whose parents did not graduate from high school, (2) those who have at least one parent who graduated from high school, and (3) those who have at least one parent who has had some post-high school education.

Source: National Assessment of Educational Progress, *Three National Assessments of Reading: Changes in Performance, 1970-80*, April 1981.

Table 27. Average Reading Performance of 9-, 13-, and 17-Year-Old Students by Race and Region: 1970-71, 1974-75, and 1979-80

Age Group, Race, and Region	Performance			Change		
	1971	1975	1980	1971 to 1975	1975 to 1980	1971 to 1980
	Average Percent Correct					
9-year-olds:	64.0	65.3	67.9	1.3*	2.6*	3.9*
White	66.4	67.0	69.3	.6	2.3*	2.8*
Northeast	67.8	69.0	71.6	1.2	2.6*	3.7*
Southeast	63.9	65.3	69.2	1.4	3.9*	5.3*
Central	68.0	69.1	70.3	1.1	1.2	2.3*
West	64.8	66.6	68.8	1.8	2.2*	4.0*
Black	49.7	54.5	59.6	4.8*	5.1*	9.9*
Northeast	54.1	56.4	62.0	2.2	5.6*	7.8*
Southeast	45.4	53.1	58.1	7.6*	5.0*	12.7*
Central	51.0	56.8	60.6	5.8*	3.8*	9.7*
West	51.7	52.6	57.2	.9	4.6	5.5
13-year-olds:	60.0	59.9	60.8	−.1	.9	.8
White	62.6	61.9	62.6	−.7	.7	**
Northeast	64.3	63.1	63.6	−1.2	.5	−.7
Southeast	59.9	60.4	61.6	.6	1.1	1.7
Central	64.4	64.3	64.8	.0	.5	.4
West	61.1	62.1	63.2	1.0	1.1	2.2*
Black	45.4	46.4	49.6	1.0	3.2*	4.2*
Northeast	48.8	48.5	53.2	−.3	4.7*	4.4
Southeast	41.5	45.5	45.5	4.0*	−.1	3.9
Central	47.7	48.6	52.4	.9	3.7	4.7
West	48.1	42.6	50.5	−5.6*	7.9*	2.4
17-year-olds:	68.9	69.0	68.2	**	−.8	−.7
White	71.2	71.2	70.6	**	−.6	−.7
Northeast	72.7	72.6	70.8	−.1	−1.8	−1.9
Southeast	68.3	70.2	70.2	2.0	.0	2.0
Central	72.6	72.9	71.6	.3	−1.3	−1.0
West	69.9	70.6	71.6	.6	1.0	1.7
Black	51.7	52.1	52.2	.5	.1	.5
Northeast	56.1	54.1	56.1	−1.9	1.9	0
Southeast	47.7	50.7	49.8	3.0	−.9	2.1
Central	53.8	54.9	54.2	1.1	−.7	.4
West	51.8	49.4	50.8	−2.4	1.4	−1.0

* Indicates statistically significant change in performance between assessments.

** Less than 0.05 percent.

Source: National Assessment of Educational Progress, *Three National Assessments of Reading: Changes in Performance, 1970-80*, April 1981.

average, while scores for whites remained stable. Although the scores of black 17-year-olds increased only slightly, those of white 17-year-olds declined somewhat. Students in urban, disadvantaged communities, those with parents who had not completed high school, and those in the southeast showed greater increases in all age categories than others.

Furthermore, black 9-year-olds decreased their share of the lowest reading achievement group, from 56 percent to 45 percent of the bottom quartile, and increased their share of the highest achievement group from 5.8 percent to 10.4 percent (see Table 28). Black 13-year-olds also decreased their share of the bottom quartile from 56 to 50 percent, but made little gain in the high achievement group. More disturbing is the fact that black 17-year-olds made little headway in moving out of the lowest achievement group—62 percent still scored below the 25th percentile in 1980—and actually decreased their representation in the highest achievement group from 5.7 percent to 3.9 percent over the decade. The slower progress of older black students is graphically displayed in Figure 3, which depicts trends on items that did not change between the three assessments.

Mathematics performance shows similar trends. On the same assessment items, black 9-year-olds made larger gains between 1973 and 1978 than did 13-year-olds, while black 17-year-olds declined in their average percent of correct responses. White students' scores on these items declined in

Table 28. Distribution of 9-, 13-, and 17-Year-Olds Within the Lowest and Highest Reading Achievement Groups, by Region, Sex, and Racial/Ethnic Group: 1970-71, 1974-75, and 1979-80

Age Group and Characteristic	*Lowest Achievement Group*			*Highest Achievement Group*		
	1971	*1975*	*1980*	*1971*	*1975*	*1980*
	Percent (Average = 25.0)					
9-year-olds:	25.0	25.0	25.0	25.0	25.0	25.0
Region:						
Northeast	21.1	21.6	21.2	27.5	29.0	28.8
Southeast	35.8	31.9	29.6	18.6	20.0	24.6
Central	19.3	20.0	22.8	29.2	28.2	25.8
West	26.5	27.9	26.0	23.0	21.6	21.6
Sex:						
Male	28.9	30.1	29.4	21.9	22.0	21.9
Female	21.1	19.9	20.6	28.1	28.0	28.1
Racial/ethnic group:						
White	19.6	21.1	21.6	28.3	27.7	27.4
Black	56.4	48.8	45.4	5.8	8.4	10.4
13-year-olds:	25.0	25.0	25.0	25.0	25.0	25.0
Region:						
Northeast	20.7	22.4	24.6	29.0	26.2	26.6
Southeast	35.3	32.5	31.9	18.1	20.2	22.0
Central	20.4	19.9	18.2	29.1	29.4	28.6
West	24.8	26.6	26.1	22.7	23.2	22.5
Sex:						
Male	29.5	29.4	29.0	21.7	20.7	21.6
Female	20.6	20.6	21.2	28.3	29.3	28.2
Racial/ethnic group:						
White	19.4	20.3	20.9	28.4	27.8	28.0
Black	56.1	56.2	49.8	6.0	5.9	6.7
17-year-olds:	25.0	25.0	25.0	25.0	25.0	25.0
Region:						
Northeast	20.5	22.5	24.8	28.1	27.4	25.6
Southeast	35.9	32.3	31.6	18.4	20.4	20.9
Central	20.7	19.8	19.8	27.3	28.2	27.4
West	26.1	28.1	25.2	24.3	22.2	25.4
Sex:						
Male	28.7	29.8	28.8	22.2	22.7	23.6
Female	21.4	20.4	21.1	27.8	27.2	26.4
Racial/ethnic group:						
White	19.9	20.1	19.7	27.6	27.7	28.2
Black	62.7	61.7	61.8	5.7	4.9	3.9

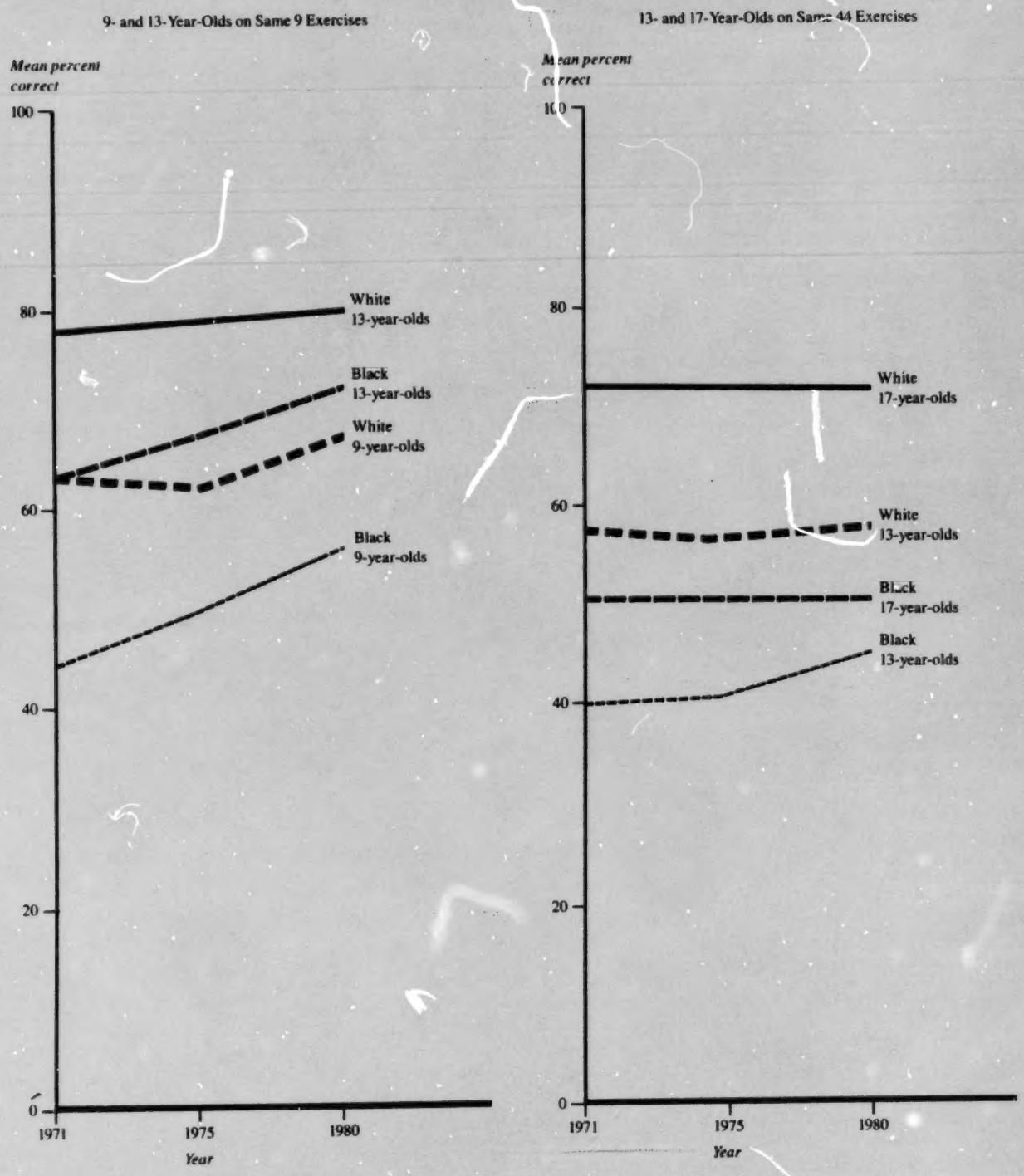
Source: National Assessment of Educational Progress, *Three National Assessments of Reading: Changes in Performance, 1970-80*, April 1981.

all age categories, though they remained substantially higher than scores of blacks (see Table 29). Between 1978 and 1982, black students' scores on the overall test increased by proportionately larger amounts than white students' scores in each age category, and while the scores of black 17-year-olds increased only slightly, those of white 17-year-olds actually declined (see Table 30). The gains for black students, relative to their white counterparts, are promising, but are far less substantial than those made in reading.

Table 31 shows that, in 1978, black students of all ages performed better in the area of mathematical knowledge—the ability to recall and recognize facts—than in the area of mathematical skills—the ability to perform mathematical computations and manipulations. The same was true of white students, although their scores were higher in both areas. Both groups scored least well in the area of mathematical applications—the ability to solve problems and use mathematical reasoning—and in this area the gap between the scores of black and white 17-year-olds was the greatest.

On the science assessments, mean scores for all students except black 9-year-olds declined between 1969-70 and 1972-73. Although black students' scores declined less than white students' scores, they were substantially lower overall. Between 1972-73 and 1976-77, all students' scores declined, and those of 17-year-olds decreased the most, as

Figure 3. Comparison Between Age Groups of Reading Performance on the Same Sets of Exercises.



Source: National Center for Education Statistics, *The Condition of Education, 1982*.

Table 29. Mean Mathematics Performance of 9-, 13-, and 17-Year-Olds by Race, Type of Community, and Parental Education: 1973 and 1978

Characteristic	9-Year-Olds			13-Year-Olds			17-Year-Olds		
	1973	1978	Change	1973	1978	Change	1973	1978	Change
	Mean Percent Correct								
National average	38.1	36.8	−1.3	52.6	50.6	−2.0	51.7	48.1	−3.6
Race:									
White	41.1	39.1	−2.0	56.6	54.2	−2.4	54.5	51.0	−3.5
Black	23.4	26.3	2.9	31.8	32.4	0.6	33.5	30.9	−2.6
Type of community[1]:									
Disadvantaged urban	25.3	27.7	2.4	34.7	36.7	2.0	40.7	35.1	−5.7
Advantaged urban	46.6	46.0	−0.7	63.6	59.4	−4.2	59.5	57.3	−2.2
Extreme rural	34.0	32.1	−1.9	50.0	45.2	−4.8	48.4	46.4	−2.0
Parental education[2]:									
Not graduated from high school	31.1	28.7	−2.3	42.8	40.3	−2.5	42.5	37.7	−4.7
Graduated from high school	39.3	36.9	−2.4	52.1	49.6	−2.6	50.0	45.5	−4.6
Post high school	44.3	42.6	−1.7	60.8	58.2	−2.5	57.9	54.1	−3.8

1. Disadvantaged urban communities are defined as those cities with a population of over 200,000 where a high proportion of the residents are on welfare or are not regularly employed. Advantaged urban communities are defined as those cities with a population greater than 200,000 where a high proportion of the residents work in professional or managerial positions.
2. Parental education levels are: (1) those whose parents did not graduate from high school, (2) those who have at least one parent who graduated from high school, and (3) those who have at least one parent who has had some post-high school education.

Source: National Assessment of Educational Progress, *Mathematical Technical Report: Summary Volume*, April 1980.

Table 30. National Assessment of Educational Progress in Mathematics for 9-, 13-, and 17-Year-Olds by Selected Characteristics of Participants: United States, 1977-78 and 1981-82

Selected Characteristics of Participants	Age 9			Age 13			Age 17		
	Mean % Correct		Mean Change	Mean % Correct		Mean Change	Mean % Correct		Mean Change
	1977–78	1981–82		1977–78	1981–82		1977–78	1981–82	
1	2	3	4	5	6	7	8	9	10
All participants	55.4	56.4	1.0	56.6	60.5	3.9	60.4	60.2	−0.2
Region:									
Northeast	58.6	59.0	0.4	60.3	64.4	4.1	63.1	62.8	−0.3
Southeast	51.4	52.9	1.5	51.6	56.2	4.6	56.5	56.7	0.2
Central	58.2	57.8	−0.4	59.3	61.9	2.6	63.0	62.1	−0.9
West	52.6	55.9	3.3	54.5	59.0	4.5	57.7	58.4	0.7
Sex:									
Male	55.3	55.8	0.5	56.4	60.4	4.0	62.0	61.6	−0.4
Female	55.3	56.9	1.6	56.9	60.6	3.7	58.8	58.9	0.1
Race:									
Black	43.1	45.2	2.1	41.7	48.2	6.5	43.7	45.0	1.3
White	58.1	58.8	0.7	59.9	63.1	3.2	63.2	63.1	−0.1
Hispanic	46.6	47.7	1.1	45.4	51.9	6.5	48.5	49.4	0.9
Parental education:									
Not high school graduate	47.9	49.2	1.3	49.0	52.4	3.4	50.1	50.3	0.2
Graduated high school	56.1	57.1	1.0	56.9	58.8	1.9	58.0	58.2	0.2
Post high school	60.5	58.9	−1.6	60.5	63.7	3.2	63.0	63.1	0.1
Size and type of community:									
Extreme rural	51.1	52.7	1.6	52.6	56.3	3.7	58.0	57.0	−1.0
Low metropolitan	44.4	45.5	1.0	43.5	49.3	5.8	45.8	47.7	1.9
High metropolitan	65.0	66.3	1.3	65.1	70.7	5.6	70.0	69.7	−0.3
Main big city	51.9	54.2	2.3	53.1	57.4	4.3	57.9	57.4	−0.5
Urban fringe	59.8	59.4	−0.4	61.0	64.4	3.4	63.6	62.3	−1.3
Medium city	56.4	56.5	0.1	61.9	63.0	1.1	65.0	62.0	−3.0
Small place	54.7	55.5	0.8	55.1	58.8	3.7	58.5	59.2	0.7

Source: Derived from data available in the files of the National Assessment of Educational Progress, July 1983.

had been the case in the earlier assessment (Forbes, 1981).

The disappointing results for older students, both black and white, and the relatively poor showings in science and mathematical applications, reflect another trend in educational performance that may signal important flaws in educational approaches in recent years. Although students are able to decode and compute, their abilities to use higher-level cognitive skills—drawing inferences from text, synthesizing and analyzing information, and reasoning logically—have declined. Tests at the upper grade levels rely much more heavily on these types of abilities, so critical to later performance and to independent thinking. Representatives of the NAEP, as well as the National Councils of Teachers of English and Mathematics, have charged that the "back to the basics" movement of the 1970s led to an emphasis on easily tested, rote skills at the expense of higher-level thinking and expressive abilities.

Curriculum and Course Content

In fact, teaching methods used in courses taken by high school seniors did change during the 1970s. Figure 4 shows that the use of methods such as student-centered discussions, project or laboratory work, and descriptive and creative writing tasks declined between 1972 and 1980, particularly in public schools. Catholic and other private schools made greater use of these methods, which are the sort that would encourage the development of critical thinking skills and the application of knowledge to experiential tasks. The use of individualized instruction and computer-assisted instruction methods increased over the same period. Unfortunately, individualized instruction often means individual workbook assignments rather than individually-tailored instruction that would provide cognitive challenge, and computer-assisted instruction often means the use of "computerized workbooks" that merely provide drill on rote skills.

Several recent studies suggest that access to and uses of computers differ significantly for black and white students. First, microcomputer ownership is much higher in wealthy school districts than in those that serve low-income students. A recent Market Data Retrieval survey indicates that 80 percent of the 2,000 richest school districts own microcomputers, as compared to 40 percent of poorer districts and only 12 percent of the high-poverty districts. Data from the National Survey of School Uses of

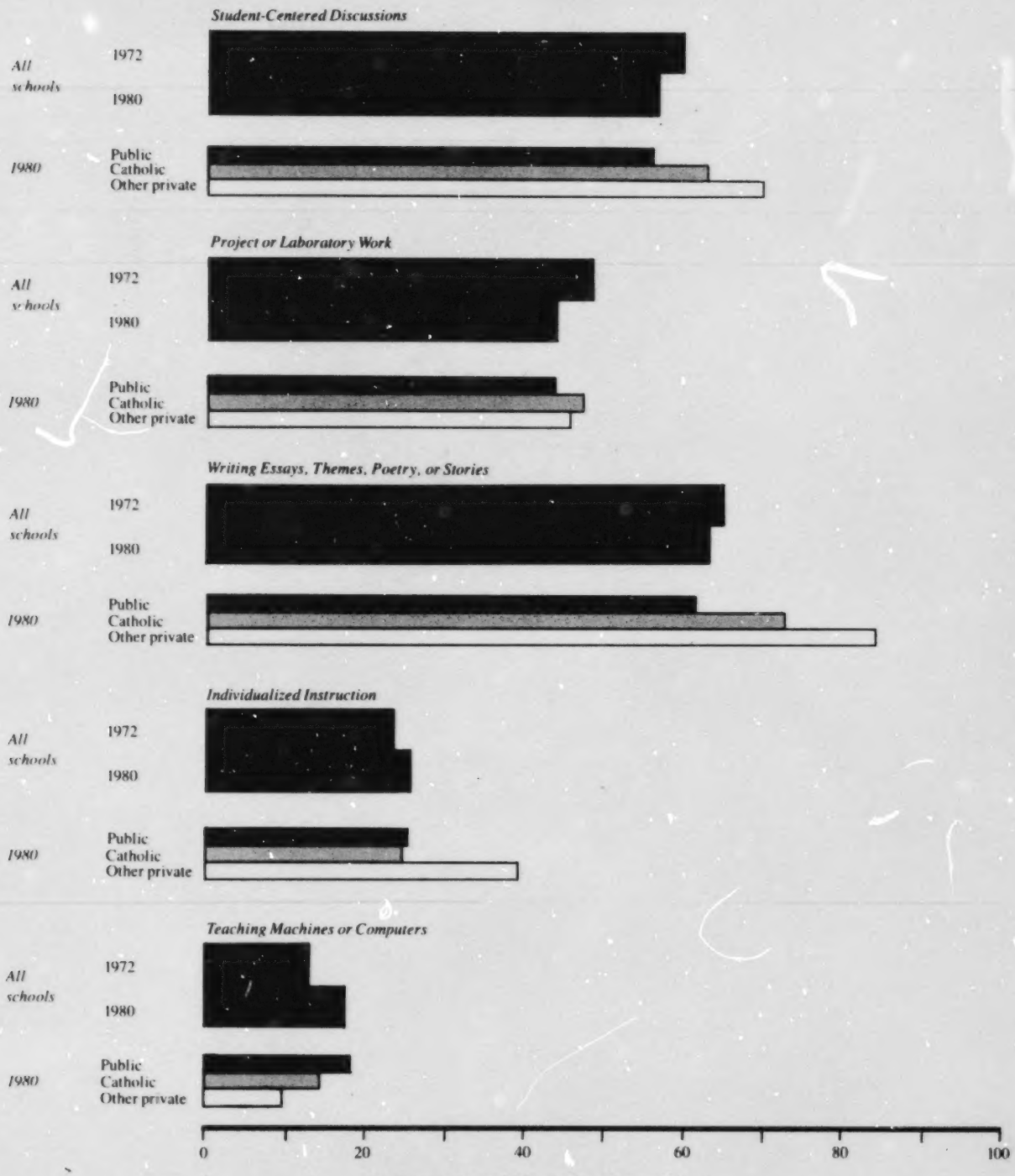
Table 31. Mean Percent Correct Responses of 9-, 13-, and 17-Year-Olds on the Same Mathematics Exercises, by Race: 1978

Race	9-Year-Olds	13-Year-Olds	Yearly Progression Rate[2]	13-Year-Olds	17-Year-Olds	Yearly Progression Rate[2]
	Mathematical Applications[1]					
	Same 33 Items			*Same 83 Items*		
All races	36.4	64.8	15.5	38.3	55.1	9.5
White	38.6	68.1	15.2	40.8	58.4	9.4
Black	26.7	48.5	16.1	25.6	35.3	8.4
	Mathematical Knowledge[1]					
	Same 78 Items			*Same 120 Items*		
All races	53.4	77.0	9.6	64.8	76.9	4.4
White	55.8	80.0	9.4	67.7	79.6	4.1
Black	42.9	62.2	9.7	50.7	60.9	4.7
	Mathematical Skills[1]					
	Same 98 Items			*Same 218 Items*		
All races	41.6	69.6	13.7	48.6	66.1	8.0
White	43.9	73.1	13.6	51.8	69.2	7.5
Black	30.6	51.9	14.1	32.4	47.2	9.9

1. Assessment areas include the following abilities: Mathematical knowledge—ability to recall and recognize facts, definitions, and symbols; mathematical skill—ability to perform mathematical computations, make measurements, read graphs and tables, perform geometric and algebraic manipulations, and estimate answers to computations and measurements; mathematical application—ability to solve typical textbook problems, solve nonroutine problems, estimate answers, and use mathematics in reasoning and making judgments.
2. Yearly progression rate in mean percent correct responses between younger and older age groups is determined by using the annual compound growth rate formula $r = \sqrt[t]{R_{t_1}/R_{t_0}} - 1$, where t = number of years difference in age (4), R_{t_1} = score for older age group, and R_{t_0} = score for younger age group.

Source: U.S. Department of Education, National Institute of Education, National Assessment of Educational Progress, *Mathematical Knowledge and Skills: Selected Results from the Second Assessment of Mathematics*, Report No. 09-MA-02, August 1979; *Mathematical Applications: Selected Results from the Second Assessment of Mathematics*, Report No. 29-MA-03, August 1979.

Figure 4. Teaching Methods Used in Courses Taken by High School Seniors.



Between 1972 and 1980, there was an increase in the proportion of students participating in classes where individualized instruction and teaching machines or computer-assisted instruction were likely to be used. In both years, lower proportions of students in public and Catholic schools than in other private schools said that student writing was likely to be used as a teaching method.

Source: National Center for Education Statistics, *The Condition of Education, 1982*. Chart 2.20.

Microcomputers show that students in low socioeconomic status and predominantly minority elementary schools have much less access to microcomputers than students in other schools, and their schools have far fewer teachers trained in the uses of computers (see Table 32).

Furthermore, in predominantly minority schools, microcomputers are much more frequently used for drill-and-practice and much less frequently used for programming instruction (Center for Social Organization of Schools, 1983). Another study of computer uses in classrooms found that patterns of microcomputer-based instruction were related both to the percentage of minority students and the ability level of the classes. In classes with low percentages of minorities, teachers used "a wide variety of microcomputer-based instructional modes stressing both skill acquisition and conceptual knowledge." In predominantly minority classes, microcomputers were used to deliver drill and practice on the basic skills (Winkler et al., 1984).

There are broader differences in the programs and courses pursued by black students compared to others. Across all grade levels, blacks are disproportionately more likely to be enrolled in special education programs and less likely to be enrolled in programs for the gifted and talented than white students. While these differences in programs may be explained partly by differences in the demographic characteristics that often predict educational achievement—and hence the more "appropriate" types of programs for different students—the overrepresentation of blacks in some programs and their underrepresentation in others varies substantially among school districts. This suggests that "opportunity variables" in addition to strictly cognitive factors are involved in program placement decisions.

In the case of gifted and talented programs, for example, there are wide variations in black representation across the 25 largest school districts (see Table 33). In most districts, black students participate in such programs at rates about 20 percentage points below their representation in the student population. In some districts, however, program participation rates narrow to less than 5 percentage points below population representation (Detroit, Houston, Boston, Nashville, and Washington, D.C.). In others, blacks are enrolled in gifted and talented programs at rates representing less than one-third of their representation in the total student population (Dade County, Fla.; Prince Georges County, Md.; Fairfax County, Va.; Jefferson County, Mo.; Baltimore County, Md.; Broward County, Fla.; Duval County, Fla.; and New Orleans).

Table 32. How Race and Socioeconomic Status Is Related to Microcomputer Ownership and Use

	Predominantly White Elementary Schools			*Predominantly Minority Elementary Schools**	*All Elementary Schools*
	Highest SES	*Middle SES*	*Lowest SES*		
Median ratio of students per microcomputer	155:1	183:1	192:1	215:1	183:1
Median percent of students who use microcomputers in a week	24%	22%	12%	13%	16%
Median hours per week that students use microcomputers	10	13	10	20	11
Median minutes of use per week per student user	24	22	35	18	23
Percent of schools having a "Computerist" teacher	46%	33%	35%	14%	35%
Percent reporting "intensive use" of microcomputers					
for drill-and-practice	13%	18%	9%	33%	18%
for programming instruction	21%	17%	49%	10%	23%
with "above average" students	24%	30%	51%	26%	31%
with "average" students	14%	9%	22%	12%	12%
with "below average" students	16%	12%	10%	32%	14%

*Note: Two-thirds of the predominantly minority elementary schools have socioeconomic statuses that would place them in the "lowest" SES category used for disaggregating predominantly white elementary schools.

Source: Center for Social Organization of Schools, *School Uses of Microcomputers: Reports from a National Survey*, Issue No. 3, October 1983.

Table 33. Racial/Ethnic Enrollment in Gifted and Talented Programs—25 Largest School Districts, 1980

		American Indian	Asian	Hispanic	Black	Minority	White	Total	Male	Female	Handicapped
Name: New York City Public Schools											
Number of Schools: 1,000											
Enrollment:	Number	470	37,071	286,870	361,555	685,966	245,227	931,193	476,945	454,248	71,438
	Percent	0.1	4.0	30.8	38.8	73.7	26.3	100.0	51.2	48.8	7.7
Gifted/Talented:	Number	247	5,008	10,906	18,285	34,446	26,378	60,824	27,855	33,135	N/A
	Percent	0.4	8.2	17.9	30.1	56.6	43.4	100.0	45.8	54.5	N/A
Name: Los Angeles Unified School District											
Number of Schools: 685											
Enrollment:	Number	2,379	38,761	243,070	125,441	409,651	128,387	538,038	277,449	260,589	53,701
	Percent	0.4	7.2	45.2	23.3	76.1	23.9	100.0	51.6	48.4	10.0
Gifted/Talented:	Number	117	4,024	5,382	3,772	13,295	11,943	25,238	12,941	12,297	N/A
	Percent	0.5	15.9	21.3	14.9	52.7	47.3	100.0	51.3	48.7	N/A
Name: Chicago City School District											
Number of Schools: 617											
Enrollment:	Number	657	9,546	82,669	269,132	362,004	83,265	445,269	225,745	219,196	37,848
	Percent	0.1	2.1	18.6	60.4	81.3	18.7	100.0	50.7	49.2	8.5
Gifted/Talented:	Number	16	213	1,051	5,108	6,388	2,624	9,012	4,013	4,966	N/A
	Percent	0.2	2.4	11.7	56.7	70.9	29.1	100.0	44.5	55.1	N/A
Name: Detroit City School District											
Number of Schools: 292											
Enrollment:	Number	347	751	3,583	182,452	187,133	25,944	213,077	107,753	105,324	10,399
	Percent	0.2	0.4	1.7	85.6	87.8	12.2	100.0	50.6	49.4	4.9
Gifted/Talented:	Number	2	12	20	1,296	1,330	290	1,620	650	970	N/A
	Percent	0.1	0.7	1.2	80.0	82.1	17.9	100.0	40.1	59.9	N/A
Name: Philadelphia Public Schools											
Number of Schools: 271											
Enrollment:	Number	117	3,319	15,964	140,336	159,736	64,416	224,152	115,463	108,689	19,843
	Percent	0.1	1.5	7.1	62.6	71.3	28.7	100.0	51.5	48.5	8.9
Gifted/Talented:	Number	1	71	74	1,548	1,694	3,254	4,948	2,388	2,560	N/A
	Percent	0.0	1.4	1.5	31.3	34.2	65.8	100.0	48.3	51.7	N/A
Name: Dade County School District											
Number of Schools: 251											
Enrollment:	Number	93	1,990	87,666	68,932	158,681	74,270	232,951	120,163	112,788	17,948
	Percent	0.0	0.9	37.6	29.6	68.1	31.9	100.0	51.6	48.4	7.7
Gifted/Talented:	Number	0	71	213	116	400	1,850	2,250	1,222	1,028	N/A
	Percent	0.0	3.2	9.5	5.2	17.8	82.2	100.0	54.3	45.7	N/A
Name: Houston Independent School District											
Number of Schools: 239											
Enrollment:	Number	124	4,098	53,922	87,105	145,249	48,811	194,060	98,185	95,875	14,375
	Percent	0.1	2.1	27.8	44.9	74.8	25.2	100.0	50.6	49.4	7.4
Gifted/Talented:	Number	1	90	514	1,579	2,184	1,703	3,887	1,739	2,148	N/A
	Percent	0.0	2.3	13.2	40.6	56.2	43.8	100.0	44.7	55.3	N/A
Name: Prince Georges County											
Number of Schools: 216											
Enrollment:	Number	272	3,416	1,382	60,793	65,863	56,031	121,894	62,929	58,965	12,946
	Percent	0.2	2.8	1.1	49.9	54.0	46.0	100.0	51.6	48.4	10.6
Gifted/Talented:	Number	6	267	48	775	1,096	4,233	5,329	2,839	2,490	N/A
	Percent	0.1	5.0	0.9	14.5	20.6	79.4	100.0	53.3	46.7	N/A
Name: Baltimore City Public Schools											
Number of Schools: 19[illegible]											
Enrollment:	Number	235	529	203	101,171	102,138	27,841	129,979	66,126	63,853	21,966
	Percent	0.2	0.4	0.2	77.8	78.6	21.4	100.0	50.9	49.1	16.9
Gifted/Talented:	Number	2	43	9	1,592	1,646	1,081	2,727	1,202	1,525	N/A
	Percent	0.1	1.6	0.3	58.4	60.4	39.6	100.0	44.1	55.9	N/A

Source: Office of Civil Rights, U.S. Department of Education. Data supplied upon request.

Table 33. Continued

		American Indian	Asian	Hispanic	Black	Minority	White	Total	Male	Female	Handicapped
Name: Dallas Independent School District											
Number of Schools: 196											
Enrollment:	Number	486	1,264	24,612	63,984	90,346	38,959	129,305	66,516	62,790	7,269
	Percent	0.4	1.0	19.0	49.5	69.9	30.1	100.0	51.4	48.6	5.6
Gifted/Talented:	Number	18	43	1,121	1,577	2,759	2,703	5,462	2,512	2,950	N/A
	Percent	0.3	0.8	20.5	28.9	50.5	49.5	100.0	46.0	54.0	N/A
Name: District of Columbia											
Number of Schools: 193											
Enrollment:	Number	29	1,089	2,048	97,962	101,128	3,779	104,907	51,979	52,462	2,870
	Percent	0.0	1.0	2.0	93.4	96.4	3.6	100.0	49.5	50.0	2.7
Gifted/Talented:	Number	36	17	27	1,696	1,776	143	1,919	912	1,325	N/A
	Percent:	1.9	0.9	1.4	88.4	92.5	7.5	100.0	47.5	69.0	N/A
Name: Montgomery County Public Schools											
Number of Schools: 181											
Enrollment:	Number	187	5,598	3,760	11,912	21,457	77,386	98,843	50,377	48,466	8,436
	Percent	0.2	5.7	3.8	12.1	21.7	78.3	100.0	51.0	49.0	8.5
Gifted/Talented:	Number	3	487	111	300	901	5,184	6,085	2,950	3,135	N/A
	Percent	0.0	8.0	1.8	4.9	14.8	85.2	100.0	46.5	51.5	N/A
Name: Fairfax County Public Schools											
Number of Schools: 173											
Enrollment:	Number	137	6,442	2,559	8,509	17,647	109,014	126,661	64,855	61,806	12,531
	Percent	0.1	5.1	2.0	6.7	13.9	86.1	100.0	51.2	48.8	9.9
Gifted/Talented:	Number	1	74	9	30	114	1,757	1,871	1,029	842	N/A
	Percent	0.1	4.0	0.5	1.6	6.1	93.9	100.0	55.0	45.0	N/A
Name: San Diego United School District											
Number of Schools: 167											
Enrollment:	Number	307	12,238	19,716	16,973	49,234	60,958	110,192	56,641	53,551	9,336
	Percent	0.3	11.1	17.9	15.4	47.7	55.3	100.0	51.4	48.6	8.5
Gifted/Talented:	Number	15	335	303	362	1,015	4,559	5,574	2,960	2,614	N/A
	Percent	0.3	6.0	5.4	6.5	18.2	81.8	100.0	53.1	46.9	N/A
Name: Jefferson County Public Schools											
Number of Schools: 164											
Enrollment:	Number	75	656	189	28,677	29,597	75,399	104,996	54,757	50,239	14,313
	Percent	0.1	0.6	0.2	27.3	28.2	71.8	100.0	52.2	47.8	13.6
Gifted/Talented:	Number	1	40	9	287	337	3,192	3,529	1,643	1,886	N/A
	Percent	0.0	1.1	0.3	8.1	9.5	90.5	100.0	46.6	53.4	N/A
Name: Memphis City School											
Number of Schools: 164											
Enrollment:	Number	15	537	43	83,078	83,673	26,440	110,113	56,558	53,555	10,636
	Percent	0.0	0.5	0.0	75.4	76.0	24.0	100.0	51.4	48.6	9.7
Gifted/Talented:	Number	0	35	3	1,134	1,172	1,760	2,932	1,324	1,608	N/A
	Percent	0.0	1.2	0.1	38.7	40.0	60.0	100.0	45.2	54.8	N/A
Name: Baltimore County Public Schools											
Number of Schools: 163											
Enrollment:	Number	103	1,766	655	11,662	14,186	85,299	99,485	51,152	48,333	7,357
	Percent	0.1	1.8	0.7	11.7	14.3	85.7	100.0	51.4	48.6	7.4
Gifted/Talented:	Number	0	67	6	19	92	1,201	1,293	631	662	N/A
	Percent	0.0	5.2	0.5	1.5	7.1	92.9	100.0	48.8	51.2	N/A
Name: Broward County School District											
Number of Schools: 155											
Enrollment:	Number	190	899	4,811	31,256	37,156	95,646	132,802	67,654	65,148	14,247
	Percent	0.1	0.7	3.6	23.5	28.0	72.0	100.0	50.9	49.1	10.7
Gifted/Talented:	Number	2	39	56	143	240	3,693	3,933	2,155	1,778	N/A
	Percent	0.1	1.0	1.4	3.6	6.1	93.9	100.0	54.8	45.2	N/A

Table 33. Continued

		American Indian	Asian	Hispanic	Black	Minority	White	Total	Male	Female	Handicapped
Name: San Francisco Unified School District											
Number of Schools: 150											
Enrollment:	Number	342	23,598	9,513	15,768	49,221	10,164	59,385	31,208	28,177	2,605
	Percent	0.6	39.7	16.0	26.6	82.9	17.1	100.0	52.6	47.4	4.4
Gifted/Talented:	Number	13	1,317	174	343	1,847	1,332	3,179	1,664	1,515	N/A
	Percent	0.4	41.4	5.5	10.8	58.1	41.9	100.0	52.3	47.7	N/A
Name: Boston Public Schools											
Number of Schools: 149											
Enrollment:	Number	300	3,314	9,171	30,900	43,685	23,681	67,366	35,045	32,321	10,611
	Percent	0.4	4.9	13.6	45.9	64.8	35.2	100.0	52.0	48.0	15.8
Gifted/Talented:	Number	7	88	85	436	616	370	986	446	540	N/A
	Percent	0.7	8.9	8.6	44.2	62.5	37.5	100.0	45.2	54.8	N/A
Name: Duval County School District											
Number of Schools: 143											
Enrollment:	Number	73	1,233	620	35,969	37,895	63,203	101,098	51,765	49,333	10,179
	Percent	0.1	1.2	0.6	35.6	37.5	62.5	100.0	51.2	48.8	10.1
Gifted/Talented:	Number	0	31	5	67	103	1,683	1,786	949	837	N/A
	Percent	0.0	1.7	0.3	3.8	5.8	94.2	100.0	53.1	46.9	N/A
Name: Milwaukee Public Schools											
Number of Schools: 143											
Enrollment:	Number	1,162	770	5,308	40,775	48,015	39,811	87,826	45,452	42,374	8,665
	Percent	1.3	0.9	6.0	46.4	54.7	45.3	100.0	51.8	48.2	9.9
Gifted/Talented:	Number	4	6	13	272	295	375	670	334	336	N/A
	Percent	0.6	0.9	1.9	40.6	44.0	56.0	100.0	49.9	50.1	N/A
Name: Columbus Public Schools											
Nmber of Schools: 140											
Enrollment:	Number	22	646	194	28,778	29,640	43,454	73,094	37,673	35,421	6,916
	Percent	0.0	0.9	0.3	39.4	40.6	59.4	100.0	51.5	48.5	9.5
Gifted/Talented:	Number	0	4	0	24	28	92	120	67	53	N/A
	Percent	0.0	3.3	0.0	20.0	23.3	76.7	100.0	55.8	44.2	N/A
Name: New Orleans Public School											
Number of Schools: 138											
Enrollment:	Number	26	2,162	1,132	72,322	75,642	10,065	85,707	43,404	42,303	6,934
	Percent	0.0	2.5	1.3	84.4	88.3	11.7	100.0	50.6	49.4	8.1
Gifted/Talented:	Number	0	21	8	218	247	579	826	417	408	N/A
	Percent	0.0	2.5	1.0	26.4	29.9	70.1	100.0	50.5	49.5	N/A
Name: Nashville Davidson County Public School											
Number of Schools: 129											
Enrollment:	Number	33	651	162	23,147	23,993	45,072	69,065	35,379	33,686	5,459
	Percent	0.0	0.9	0.2	33.5	34.7	65.3	100.0	51.2	48.8	7.9
Gifted/Talented:	Number	0	1	0	20	21	48	69	36	33	N/A
	Percent	0.0	1.4	0.0	29.0	30.4	69.6	100.0	52.2	47.8	N/A

Table 34. Curricular Programs[1] of 1980 High School Seniors, by Sex, Racial/Ethnic Group, Ability, and Socioeconomic Status, Spring 1980

Characteristic	Total	Academic	General	Vocational								Sample Size
				Total Vocational	Agriculture	Office Occupations	Distributions	Health	Occupational Home Economics	Technical	Trade and Industrial	
	Percentage Distribution											
Total	100.0	38.73	6.9	24.5	2.7	9.8	2.1	1.1	1.3	2.1	5.4	27,775
Sex:												
Male	100.0	39.0	38.0	23.0	3.9	3.3	1.9	.4	.4	3.6	9.5	12.729
Female	100.0	38.4	35.9	25.8	1.6	15.7	2.3	1.7	2.1	.7	1.7	13,878
Racial/ethnic group:												
White non-Hispanic	100.0	39.8	37.1	23.1	2.5	9.4	2.0	1.0	.9	2.0	5.3	19,618
Black non-Hispanic	100.0	33.0	35.2	31.8	3.7	11.9	3.0	1.6	3.6	1.8	6.2	3,695
Hispanic	100.0	26.9	41.6	31.5	4.4	10.5	2.2	1.4	2.3	2.8	7.9	3,107
American Indian/ Alaskan Native	100.0	24.4	45.5	30.1	4.7	9.2	1.3	1.4	.7	1.3	11.5	211
Asian or Pacific Islander	100.0	52.4	29.0	18.5	1.8	8.2	1.6	1.2	1.3	3.0	1.5	362
Ability[2]												
Low	100.0	13.8	47.1	39.0	5.4	13.1	3.5	1.9	3.2	2.2	9.7	6,796
Middle	100.0	33.5	40.9	25.8	2.7	11.5	2.2	1.0	.9	2.2	5.3	12,081
High	100.0	72.3	20.0	7.8	.4	3.2	.7	.3	.1	1.5	1.6	5,822
SES[3]												
Low	100.0	21.1	43.4	35.4	4.4	13.6	2.8	1.8	2.4	2.5	7.9	8,237
Middle	100.0	36.3	38.4	25.2	2.8	10.2	2.2	1.0	1.0	2.2	5.8	12,655
High	100.0	62.0	27.4	10.5	.8	4.2	1.2	.4	.4	1.2	2.3	6,129

1. Curricular programs can be generally defined as follows. academic—those preparing students for college; vocational—those preparing students for employment immediately following high school graduation; general—those with students considering themselves to be in neither academic nor vocational programs.
2. The general academic ability index was derived from four base-year "Test Book" scores; vocabulary, reading, letter groups, and mathematics.
3. The SES index was based on a composite score involving five components: father's education, mother's education, parental income, father's occupation, and a household items index.

Source: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Study, unpublished tabulations, August 1982.

That these differences are due to factors other than academic achievement or ability is highly plausible. An explanation proferred by Meier and England (1984) is that political variables within a school district affect the programs available to and educational conditions affecting black students. They found that, for 82 of the largest central city districts in the United States, the proportion of blacks among school board members during the 1970s was significantly correlated with higher ratios of black teachers, lower suspension and dropout rates for black students, lower representation of blacks in special education programs and in classes for the educationally and mentally retarded, and higher representation of blacks in enriched or advanced courses. These effects were explained partly by other factors occurring simultaneously, particularly the percentage of blacks in the total school district population (which, interestingly, had stronger effects than black income, education, or political resources). The point remains, however, that program placements and other educational conditions are influenced by factors beyond individual student characteristics.

Few data are available about program placements of students below the senior high school level. However, since educational tracking has cumulative effects, we can infer something about students' earlier school experiences by their status in high school. Table 34 shows that in 1980, 33 percent of black high school seniors were enrolled in academic programs (as compared to 40 percent of white seniors), 35 percent were in general education programs (versus 37 percent of white students), and 32 percent were in vocational education programs (versus 23 percent of whites). Black students were significantly overrepresented in vocational programs and significantly underrepresented in the academic program track.

This distribution has important implications for educational achievement. First, vocational education students earn fewer school credits in areas such as English, mathematics, and science (see Table 35). Furthermore, the content of their courses in these academic subjects is often different than that experienced by students in other curricular tracks (e.g., general math rather than algebra and trigonometry, or general science rather than biology and chemistry). As Tables 36 and 37 show, years of coursework in English and mathematics are related to test scores in those areas, although after two years of English, little gain is made by vocational students with more coursework. For black students, large gains in mathematics scores are realized after two years or more of high school math courses.

Table 38 shows that in all types of schools—public, Catholic, and other private schools—vocational education students in their sophomore year scored lower than students in other programs on tests of verbal skills, mathematics, and science. Vocational students also were less likely to improve their scores over the subsequent two years of high school, particularly in mathematics (NCES, 1984). While students in Catholic and other private schools outscored their public school counterparts, the differences narrowed when only students in academic programs were compared.

Another disturbing trend was discovered in the Study of Schooling examination of vocational education programs (Oakes, 1983). While white students and minorities were enrolled in vocational programs in the sample schools in about equal proportions, nonwhite students were enrolled earlier and more extensively in programs training specifically for low-status occupations than were white students. As the author notes:

> Business courses available to nonwhites were those that taught clerical skills or retail sales. White students, on the other hand, were offered business programs emphasizing the

Table 35. Mean Number of Credits Earned in Various Fields of Study by 1980 Sophomores During 4 Years of High School, by Sex of Student and High School Program[a,b]

Field of Study[c]	All Students	Sex		High School Program		
		Male	Female	Academic	General	Vocational
Total[d]	21.0	20.6	21.4	22.1	20.5	20.7
English	3.6	3.5	3.7	3.9	3.6	3.4
Mathematics	2.5	2.6	2.5	3.2	2.2	2.0
Social sciences	2.6	2.6	2.5	2.6	2.6	2.4
Philosophy, religion, theology	.2	.2	.3	.4	.1	.1
Psychology	.1	.1	.2	.2	.1	.1
Area and ethnic studies	.3	.3	.3	.3	.2	.3
Physical sciences	.9	1.0	.9	1.4	.7	.5
Life sciences	.9	.9	1.0	1.2	.8	.7
Foreign languages	1.0	.8	1.2	1.8	.6	.4
Computer and information sciences	.1	.1	.1	.1	.1	.1
Business	1.7	1.0	2.4	1.2	1.6	2.7
Trade and industry	.9	1.6	.2	.5	1.0	1.3
Home economics	.7	.3	1.1	.4	.9	.9
Industrial arts	.3	.5	*	.2	.3	.4
Communications	.2	.1	.2	.2	.2	.1
Agriculture	.2	.3	.1	.1	.2	.4
Multi-interdisciplinary studies	.3	.4	.3	.3	.4	.4
Visual and performing arts	1.4	1.2	1.6	1.5	1.6	1.1
Personal and social development	2.8	2.9	2.6	2.4	3.0	2.9
All other categories[e]	.3	.3	.4	.2	.3	.5

*Less than .05 percent.

a. Excludes those who had dropped out of school or graduated before spring 1982.

b. Estimates in this table were derived from transcripts. Only courses for which the student received at least a D minus or pass grade (pass-fail grading system) were included.

c. These fields correspond to those presented in *A Classification of Secondary School Courses*, by M. J. Ludwig *et al.*, Evaluation Technologies Inc., NCES 82-242, July 1982.

d. Details may not equal totals because of rounding.

e. Residual is composed of architecture and environmental design; consumer, personal and miscellaneous services; education; health; law; liberal/general studies; library and archival studies; military sciences; parks and recreation; and public affairs and protective services.

Source: National Center for Education Statistics, National Longitudinal Study, *The Status of 1980 Sophomores in 1982*.

Table 36. Mean Test Scores on Vocabulary and Reading Assessments of High School Seniors, Number of Years of English Taken, by Type of High School Program, Sex, and Socioeconomic Status—1980

Characteristic	Number of Years of English			
	Less Than 1 Year	*Less Than 2 Years*	*Less Than 3 Years*	*3 or More Years*
		Mean Test Score[1]		
		Vocabulary I		
Type of high school program:				
General	43.62	46.86	48.01	50.06
Academic	43.20	51.39	53.79	56.59
Vocational	42.03	46.70	46.88	47.57
Sex:				
Male	43.44	47.70	50.03	53.87
Female	42.26	47.47	48.93	53.38
Socioeconomic status:				
Low	43.46	45.37	45.93	48.21
Middle	44.14	48.51	49.86	53.12
High	45.85	49.39	53.51	57.39
		Vocabulary II		
Type of high school program:				
General	44.07	47.18	48.26	49.96
Academic	43.42	52.28	53.92	56.09
Vocational	44.10	47.41	47.29	47.13
Sex:				
Male	45.53	48.60	51.00	54.56
Female	42.69	47.40	48.49	52.15
Socioeconomic status:				
Low	43.07	46.36	46.32	48.35
Middle	45.38	48.80	50.05	52.56
High	44.01	49.64	53.65	56.89
		Reading		
Type of high school program:				
General	42.40	47.05	48.36	50.03
Academic	43.32	52.79	54.60	56.36
Vocational	41.54	47.00	47.41	47.25
Sex:				
Male	42.37	48.18	50.60	53.79
Female	42.61	47.69	49.43	53.09
Socioeconomic status:				
Low	41.15	45.48	46.36	48.27
Middle	43.84	49.18	50.48	53.12
High	43.15	49.63	54.01	56.79

1. Means exclude scores of students enrolled in remedial English or English as a second language.

Note: Scores are standardized to a mean of 50 points and a standard deviation of 10 points.

Source: U.S. Department of Education, National Center for Education Statistics, 1980 High School and Beyond Study, unpublished tabulations.

Table 37. Mean Mathematics Test Scores of High School Seniors, by Number of Years of Mathematics Taken, Racial/Ethnic Group, Sex, and Socioeconomic Status—1980

Characteristic	Mathematics Test I Scores[1]					Mathematics Test II Scores[1]				
	Number of Years of Mathematics Taken					Number of Years of Mathematics Taken				
	None	Less Than 1 Year	Less Than 2 Years	Less Than 3 Years	3 Years or More	None	Less Than 1 Year	Less Than 2 Years	Less Than 3 Years	3 Years or More
	Mean Test Score									
Racial/ethnic group:										
White	45.66	48.07	52.39	57.54	58.87	45.04	47.41	51.09	56.52	58.60
Hispanic	41.92	42.06	44.44	49.92	50.27	45.04	44.53	46.32	50.22	51.69
Black	40.51	41.13	42.62	46.80	48.88	42.71	43.60	45.50	47.49	49.90
American Indian or Alaskan Native	41.13	45.90	45.68	51.97	53.30	41.57	45.08	46.77	50.71	50.06
Asian or Pacific Islander	51.27	47.27	51.58	58.30	60.16	44.94	46.05	52.46	59.82	62.41
Sex:										
Male	45.19	47.85	51.41	57.45	58.39	43.45	47.62	50.72	56.69	58.24
Female	45.08	46.65	50.36	54.90	56.21	44.60	46.43	49.81	54.13	56.33
Socioeconomic status:										
Low	44.38	44.46	46.12	50.66	51.81	45.06	45.40	46.82	50.39	52.27
Middle	45.37	47.90	51.16	56.07	57.11	44.42	47.27	50.27	55.05	57.20
High	47.47	49.83	54.69	59.01	60.38	45.84	48.61	53.21	58.26	59.99

1. Mathematics test I was designed to measure basic competence in quantitative skills, while mathematics test II measured the skills at a higher level. Because each set of test scores is standardized, comparisons can only be made within each test.

Note: Scores are standardized to a mean of 50 points and a standard deviation of 10 points.

Source: U.S. Department of Education, National Center for Education Statistics, 1980 High School and Beyond Study, unpublished tabulations.

Table 38. Mean Scores[a] on Verbal Skills, Mathematics, and Science Tests of 1980 Sophomores[b] in 1982, by High School Type and Program

High School Type	High School Program	Verbal Skills[c]	Mathematics[d]	Science
All	All	30.1	15.5	10.2
Public	All	29.4	14.9	10.1
Catholic	All	36.7	20.1	11.3
Other private[e]	All	37.4	20.8	11.8
All	Academic	36.3	20.5	11.7
All	General	26.4	12.0	9.4
All	Vocational	22.1	9.2	8.1
Public	Academic	35.7	20.1	11.7
Catholic	Academic	38.6	21.7	11.8
Other private[e]	Academic	41.6	24.3	12.7

a. Formula score (corrected for guessing).
b. Excludes those who had dropped out of school, transferred to another school, or graduated before spring 1982.
c. Vocabulary, reading, and writing tests.
d. Both computational and curriculum specific (e.g., geometry) tests.
e. Estimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

Source: National Center for Education Statistics, National Longitudinal Study, *The Status of 1980 Sophomores in 1982*.

managerial and financial aspects of the business world as well.... Even more blatant than the differences in vocational business courses were the content differences in programs dealing with manual skills. Programs in this area at schools with white populations were formed largely of general industrial arts classes.... Courses serving nonwhite student groups were more likely to consist of training for specific low-level occupations—cosmetology, the needle trades, mill and cabinet shop, building maintenance, TV repair, and vocational child care, for example—than were courses at white schools.... Moreover, these programs more often took nonwhites off the school campus for extended periods of time, a format likely to distance them from academics and the regular context of schooling (pp. 349-350).

Oakes also found that vocational education tracking occurred at the junior high level without decisionmaking input by students or their parents. Instead, students were assigned to vocational education by school personnel, and subsequently were "locked in" to their curricular placements. Based on the types of programs available to blacks and their low rates of return, she concludes: "It is unlikely that vocational training programs provide either the type or scope of education necessary to overcome race and class obstacles to employment....In view of these findings, educators and policymakers should seriously reconsider the appropriateness of specific occupational training in secondary schools" (Oakes, 1983, pp. 351, 353).

Table 39. Percentage of 1980 High School Seniors Taking Mathematics and Science Courses, by Course Title, Sex, and Racial/Ethnic Group

Course	All Seniors	Sex		Racial/Ethnic Group				
		Male	Female	Hispanic	Black	White	Native American	Asian
Algebra I	79	79	79	67	68	81	61	88
Algebra II	49	51	47	38	39	50	32	76
Geometry	56	58	55	39	38	60	34	79
Trigonometry	26	30	22	15	15	27	17	50
Calculus	8	10	6	4	5	8	5	22
Physics	19	26	14	15	19	20	17	35
Chemistry	37	39	35	26	28	39	24	59

Source: U.S. Department of Education, National Center for Education Statistics, *High School and Beyond...A Capsule Description of High School Students*, 1981.

Table 40. Mean Mathematics Test Scores of High School Seniors, by Types of Mathematics Courses Taken and Racial/Ethnic Group—1980

Characteristic	Algebra I Only		Algebra I and Geometry		Algebra I, Geometry, and Algebra II		Algebra I, Geometry, Algebra II, and Trigonometry		Algebra I, Geometry, Algebra II, Trigonometry, and Calculus	
	Math Test I	Math Test II	Math Test I	Math Test II	Math Test I	Math Test II	Math Test I	Math Test II	Math Test I	Math Test II
	Mean Test Score[1]									
White	49.44	48.30	53.74	52.23	56.55	55.02	60.07	59.21	62.65	62.64
Black	41.85	44.69	46.63	47.36	48.90	49.07	53.46	53.26	55.59	56.22
Hispanic	44.39	45.74	49.08	49.29	51.06	50.63	54.09	53.92	59.59	57.56
American Indian or Alaskan Native	45.54	45.70	49.88	49.95	53.35	51.95	55.59	53.20	63.06	59.36
Asian or Pacific Islander	50.80	51.30	53.90	54.97	56.25	58.10	59.47	60.50	63.95	63.98

1. Mathematics test I was designed to measure basic competence in quantitative skills, while mathematics test II measured the skills at a higher level. Because each set of test scores is standardized, comparisons can only be made within each test.

Note: Scores are standardized to a mean of 50 points and a standard deviation of 10 points.

Source: U.S. Department of Education, National Center for Education Statistics, 1980 High School and Beyond Study, unpublished tabulations.

Table 41. Remedial and Advanced Courses in English and Mathematics Taken by High School Sophomores and Seniors, by Race/Ethnicity, Sex, and Socioeconomic Status—1980

Student Characteristic	Remedial		Advanced or Honors	
	English	Mathematics	English	Mathematics
		Percent		
All sophomores	34.1	34.2	22.9	24.2
Race/ethnicity:				
White[1]	34.6	33.5	22.7	24.4
Black[1]	32.5	37.0*	22.3	21.8*
Hispanic	35.5	39.1*	19.6*	19.9*
American Indian	44.2	45.4*	18.1	17.3
Asian/Pacific Islanders	27.7	24.6*	36.4*	39.7*
Sex:				
Male	36.7	35.8	20.2	25.1
Female	34.1**	32.7**	25.4**	23.4**
Socioeconomic status:				
Low	39.8***	41.0***	15.9***	18.0***
Middle	35.6	35.3	21.6	23.3
High	25.4***	24.9***	32.8***	32.6***
All seniors	30.8	30.0	26.9	23.0
Race/ethnicity:				
White[1]	30.8	29.3	27.0	23.4
Black[1]	31.3	34.3*	25.7	20.3*
Hispanic	33.1	37.5*	23.0*	18.0*
American Indian	39.7	41.9*	25.7	18.7
Asian/Pacific Islanders	30.5	22.4*	34.3	41.9*
Sex:				
Male	33.8	31.7	24.3	25.5
Female	28.1**	28.5**	29.2**	20.8**
Socioeconomic status:				
Low	38.2***	39.0***	18.3***	16.1***
Middle	32.1	30.9	25.6	22.3
High	21.3***	19.6***	38.7***	32.[illegible]***

*Represents significant difference from the white population at the .05 level.
**Represents significant difference from the male population at the .05 level.
***Represents significant difference from the middle socioeconomic status population at the .05 level.

1. Non-Hispanic.

Source: U.S. Department of Education, National Center for Education Statistics, unpublished tabulation from the High School and Beyond Survey.

The foregoing is not meant as a general indictment of vocational education. To the extent that vocational programs help students acquire useful skills, encourage them to complete high school, and prepare them for available jobs, they provide important opportunities. However, for black students, especially, the quality and equality of educational experiences available in vocational programs are a matter for concern, as is the degree to which students assigned early to vocational or general education tracks have opportunities to expand or modify their course options in later grades.

Looking at the overall school population, black high school seniors were as likely as white seniors in 1980 to have taken three or more years of coursework in mathematics, but less likely to have taken three or more years of coursework in science (NCES, 1981). However, as Table 39 shows, blacks were much less likely than whites to have taken algebra I or II, geometry, trigonometry, calculus, or chemistry. Thus, a logical conclusion is that their years of coursework in mathematics must have been more concentrated in courses such as general math or business math than in academic courses. As Table 40 shows, the types of math courses taken are directly related to mathematics achievement test scores for all types of students. Black high school seniors were significantly more likely than white seniors to be enrolled in remedial math courses and significantly less likely to be enrolled in advanced math courses; however, representation was more nearly equal in remedial and advanced English courses (see Table 41). Among college-bound seniors in 1981, most blacks had taken fewer years of

coursework in mathematics, physical sciences, and social studies than their white counterparts (College Board, 1982).

Some of the disparities between the educational experiences and outcomes of black and white students may be the result of differential aptitudes or interests. However, there are many other factors that shape the options and opportunities available to students. In the next section, policy trends that affect the condition of education for black students and that place boundaries on their futures are examined.

Policies Affecting Access and Success

A comprehensive look at all of the policies affecting educational opportunity would be well beyond the scope of this report. Instead, we will focus on a few recent trends that have major implications for black students' schooling experiences: school finances and the growing movement toward privatism in elementary and secondary education as well as higher education; graduation and other requirements for students; and policies affecting the size and composition of the teaching force.

Financing Education

Funding for public education is most important for students whose families lack the financial resources to purchase educational opportunities in the private sector or to provide educational supports in the home. For black students, nearly half of whom live in families below the poverty line and most of whom attend schools in central cities, federal and state funding of education, especially urban education, are critical indices of educational opportunities.

Following the "property tax revolt" of the late 1970s, expenditures for education declined in real dollar terms in many school districts and most states. Those hardest hit were in the northeast and midwest where tax rates had been highest, but the effects of these changes rippled through the entire country. At the same time, declining enrollments forced a number of school districts, especially urban districts, to reduce the size of their teaching forces, close school buildings, and trim the budget in other areas as well. Since enrollments generally are the driving factor in state aid programs, reduced enrollments meant less state aid for these school districts while the levels of state aid were also declining because of revenue shortfalls.

With the advent of the Reagan administration in 1980, cuts in federal aid to education occurred in many areas. Despite congressional attempts to restore aid since 1982, overall federal spending for elementary and secondary education remains in 1984 about 20 percent below what it would have been if 1981 policies had stayed in effect (Simms, 1984). Table 42 shows the policy changes that occurred in fiscal year 1982. Impact aid, compensatory education, and vocational education programs were most negatively affected.

The Education Consolidation and Improvement Act (ECIA) of 1981 made two major changes in federal education policy. First, Title I of the former ESEA—compensatory education for disadvantaged students—was part of the consolidation. The new Chapter 1 of ECIA reduced the regulatory requirements for targeting of funds, comparability among expenditures in target and nontarget schools, and monitoring; it also reduced funding levels. As a result, the number of students served by this highly effective program declined, and other students received less intensive services. Although appropriations for Chapter 1 have increased somewhat since 1982, funding still remains well below previous policy levels, and large numbers of eligible students remain unserved.

Second, about 30 smaller programs were consolidated in Chapter 2 of ECIA. Among these programs was the Emergency School Assistance Act (ESAA), which had provided funds to desegregating school districts, particularly large urban districts. As a result of the consolidation, funds that had been targeted for special purposes and special pupil populations were instead allocated by enrollment-based formulas. This had the effect of severely reducing funding to many predominantly minority urban school districts and causing the dismantling or diminished scope of many innovative programs (Darling-Hammond and Marks, 1983; Simms, 1984). Although some states tried to restore some of these funds by including special factors in their allocation formulas, the reductions in both federal and state revenues precluded them from offsetting the overall effects of the changes.

Funding for postsecondary financial aid programs was also cut, and changes in eligibility requirements made it more difficult for students to receive financial assistance for college. As one indicator of the effects of these changes, Figure 5 shows that the percentages of students receiving financial aid declined between 1980-81 and 1981-82. The percentage of students receiving grants decreased from 43 to 36 percent, with a drop in the proportion receiving Pell grants from 25 to 20 percent. The average dollar value of grants also decreased from $616 to $561 (NCES, 1984). Those receiving low-interest National Direct Student Loans also decreased in number and percent. Given the income levels and persistence rates of black students not receiving financial aid, these cutbacks have serious implications for access to higher education opportunities.

While the Reagan administration reduced funding for elementary and secondary education and for financial aid, it introduced proposals for tuition tax credits for private school attendance and for a Chapter 1 voucher plan. These measures were not enacted during Reagan's first term, but indications are that they will be re-introduced at the start of

Table 42. Elementary and Secondary Budgets, Fiscal Year 1982 (Millions of Dollars)

Program	*Congressional Action*	*Change in Current Services*	
		Previous Year Policy Level	*Percent Change Enacted*
Compensatory Education (Chapter 1)			
Budget authority	3,041	3,961	−23.2
Outlays	2,954	3,475	−17.6
Special Programs and Populations			
Budget authority	NA	NA	NA
Outlays	NA	NA	NA
Block Grant (Chapter 2)			
Budget authority	442	NA	NA
Outlays	751	NA	NA
Indian Education			
Budget authority	343	380	−9.7
Outlays	339	368	−7.9
Impact Aid			
Budget authority	466	866	−46.2
Outlays	546	837	−34.8
Education for Handicapped			
Budget authority	1,069	1,208	−11.5
Outlays	1,141	1,040	+9.6
Vocational and Adult Education			
Budget authority	742	1,022	−27.4
Outlays	818	930	−12.0
Other			
Budget authority	NA	NA	NA
Outlays	NA	NA	NA
Bilingual Education			
Budget authority	138	143	−3.5
Outlays	167	135	23.7
Total Elementary and Secondary Education			
Budget authority	6,403	8,271	−22.6
Outlays	6,780	7,427	−8.7

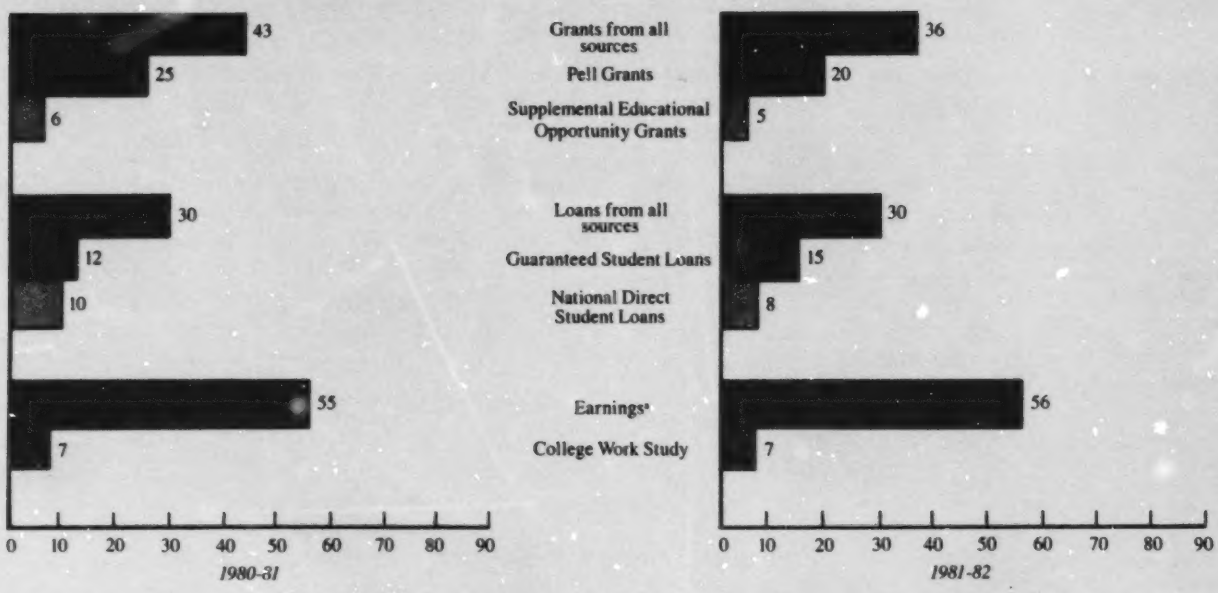
Source: Congressional Budget Office.

his second term. Although public support for private education in the form of tuition tax credits has generally been held unconstitutional by the courts, in 1983 the U.S. Supreme Court upheld a tuition tax deduction statute in Minnesota, the first time it had ever approved such a tax subsidy for private school parents. A recent analysis of the effects of the Minnesota tax deduction on parental choice indicates that the deduction has little or no effect on parents' school choices, while disproportionately benefiting higher income and better educated households. The study also found that parents of private school students are much less likely than parents of public school students to report that they will vote for increased funding for public schools (Darling-Hammond and Kirby, forthcoming).

Moves toward the privatization of education are cause for some alarm on the part of those concerned with the quality of education for minority students. While proponents of subsidies for private school costs argue that they will enhance educational equity by providing options to poor and middle income parents that would otherwise be available only to the rich, opponents counter that poorer parents will be constrained in using the subsidies because of the difficulty of affording immediate costs of private schools and eligibility restrictions on the use of tax subsidies. Although it is conceivable that privatization could improve educational quality by enhancing competition among schools, it is also quite possible that more affluent parents will leave the public schools, which will then have more tenuous public support and a more racially and socioeconomically stratified population (Wise and Darling-Hammond, 1983; Watson, 1982).

A number of policies begun in the 1960s and early 1970s have greatly increased educational opportunities for black students, and we are just beginning to see the fruits of these efforts: federal funding for compensatory education, school finance reform that equalized and increased expen-

Figure 5. Percentages of Students Receiving Specified Kinds of Financial Aid: Academic Years 1980-81 and 1981-82.



*Includes those portions of the students' personal funds that were used in financing their schooling. These funds were derived primarily from employment earnings but might also include gifts.

Source: National Center for Education Statistics, *Two Years After High School: A Capsule Description of 1980 Seniors*, 1984.

ditures for public education, and financial assistance for higher education are among these beneficial changes. It is important that we not lose the ground we have so laboriously gained in the public educational sector by relying on trickle-down policies that stop short of meeting the needs of all students.

Educational Standards

Another trend over the past decade has been the codification in state law of new "standards" for students. These generally have taken the form of minimum competency testing requirements with required cutoff scores for graduation or, in some cases, promotion. By 1984, 39 states had passed laws or regulations requiring minimum competency testing (MCT). In the new wave of policy initiatives, states are beginning to require more coursework of specified types for graduation. The "new basics," as they are sometimes called, consist of four years of high school English, three to four years of mathematics and sciences, at least two years of a foreign language, and three to four years of social science study. Both of these movements represent good faith efforts to improve the quality of education for students. Both, however, may also have some unintended consequences as they are implemented at the local school district, school, and classroom levels.

Minimum Competency Testing

When minimum competency tests were first instituted, black students failed them at rates far higher than their white peers. In Florida, a lawsuit alleging that such tests discriminated against black students, who had spent most of their school careers in segregated institutions, caused a delay in implementing the tests as a graduation requirement. The test ban has now been lifted, and in Florida as elsewhere, passing rates are beginning to increase, although black students still fail the tests at higher rates than whites.

The improved pass rates in most states with each passing year may mean that educational quality is improving. There is some evidence, though, that minimum competency testing has encouraged teachers to "teach to the test" at the expense of other kinds of learning that are arguably more important than the kinds of recall and recognition items represented on the competency tests. Some would contend that teaching to the test is not a bad thing if it means that students master important skills that would otherwise go untaught. On the other hand, if the tests do not represent "enabling skills"—the types of learning that are building blocks or prerequisites for critical thinking and expression—they may be deflecting attention from more important learning activities.

In fact, this is what Gerald Bracey, Director of Research, Evaluation and Testing for the state of Virginia,

believes is happening with the implementation of MCT. He alleges that such tests do not really measure the conceptual preparation or performance abilities of students, that the skills they test are not "basic" and do not enable the development of higher-order skills; and that they "force teachers to regress even more than usual into an ineffectual, didactic mode of teaching that does one thing—teaches students to be dependent on teachers" (Bracey, 1983). Moreover, those most in danger of failing receive a curriculum geared to the content and format of the tests. Bracey accuses MCT programs of being racist in impact, because they emphasize the teaching of discrete, obsolete skills to those students who most need an enriched program of instruction.

As examples of the types of learning emphasized by minimum competency tests, Bracey describes features of the Virginia test, which is similar to those used in other states. The test requires students to multiply fractions of denominators 1 through 5. This "skill" is not more basic than adding, subtracting, or dividing fractions (all of which are functions more commonly used in later life activities), but it is easier to teach by rote. The test also requires students to recognize parallel lines, and 90 percent of the test takers demonstrate "competence" on this "skill." However, when a question involving perpendicular lines was included in a test one year by mistake, fewer than 45 percent of the students could answer the question. It appears that the test does not mean that students are learning more about the concepts of plane geometry; they are merely memorizing the facts that appear on the test.

In districts that use test-managed instructional strategies of the sort compatible with minimum competency tests, the teaching of nontested subjects often declines (science, social studies, and the arts are the big losers), and modes of teaching switch from performance-oriented activities such as reading books, discussing ideas, writing, and projects requiring inductive problem-solving, to test-oriented activities such as multiple-choice and fill-in-the-blank worksheets, memorization of facts, and drill on rote skills (Darling-Hammond and Wise, 1985; Talmage and Rasher, 1980). As John Goodlad observed from his massive study of more than 1,000 classrooms: "Teachers are sensitive to the pressures that state and district testing programs place on them. They get the message. The other message—that there are goals beyond those that the tests measure and that pursuing such goals calls for alternative teaching strategies—are faint to begin with, and they are drowned out by the more immediate and stronger message" Goodlad, 1983).

The effects are worst for those who most need improved educational programs. Those who start out "behind" receive the most drill on skills that are not directly related to actual learning activities, the most exposure to multiple-choice and fill-in-the-blank workbooks and tests, and the least exposure to real books, to writing, to exploration of ideas, and to critical thinking. The very things that might make school inspiring, that might make them competent performers, and that would ultimately close the "skill gap" are actually discouraged in systems that emphasize the acquisition of so-called "basic skills" that are little more than trivial subobjectives leading nearly nowhere in terms of important learning.

Furthermore, testing programs that determine students' promotion from grade-to-grade do another disservice to students. Recent research has found that future educational performance of similar students is greater for those promoted to the next grade than for those retained. The potential benefits and detriments of minimum competency testing and similar approaches to educational improvement must be weighed carefully in the context of what they actually measure, what their effect is on students' subsequent educational opportunities, and what types of teaching they in fact encourage.

The "New Basics"

Increased requirements for graduation also hold promise for improving the content of educational programs and for reducing existing differences in the types of schooling experiences various students receive. At least 20 states have increased the number of academic courses necessary for graduation over the past three years, and nearly that number are considering such reforms. However, there are at least two questions that should be kept in mind as these reforms are being implemented: (1) who will take these courses? and (2) who will teach these courses?

Black students have made great strides over the past decade in staying in school at least until high school graduation. A variety of alternative programs have been implemented to improve school retention. Some have argued that the imposition of increased course requirements may discourage those students who have remained in school with the benefit of more flexible programs of study, if they find the courses too difficult, uninteresting, or irrelevant to their perceived immediate needs. While this need not happen if programs are structured with some flexibility and administered with some sensitivity, there is a definite possibility that uniform educational requirements, as is the case in many other countries with similar standards, may exclude a sizable minority of students from school altogether.

The question of who will teach the new courses and, as a consequence, what the quality of the courses will be is equally important. The "new basics" include many higher-level mathematics and science courses in addition to increased requirements in the humanities and social sciences. As discussed in the next section, the current shortage of qualified teachers means that many of the existing courses in secondary schools, particularly in math and science, are being taught by teachers not certified or certifiable in those subject areas. The most common responses of states and school districts to the emerging shortages have been to assign teachers out of field, increase class sizes, issue emergency certificates to uncertified teaching candidates, or to cancel classes altogether.

The distribution of different types of teachers is not equal across school districts. Those with more money for teachers' salaries and with more desirable working conditions are able to attract a teaching force more capable of serving these new curricular demands. Others will have to make do with whomever they can find. Clearly, as requirements change, students who are taught by competent teachers in smaller classes will receive far greater benefits from their educational programs than those who live in districts that have difficulty attracting and retaining qualified teachers.

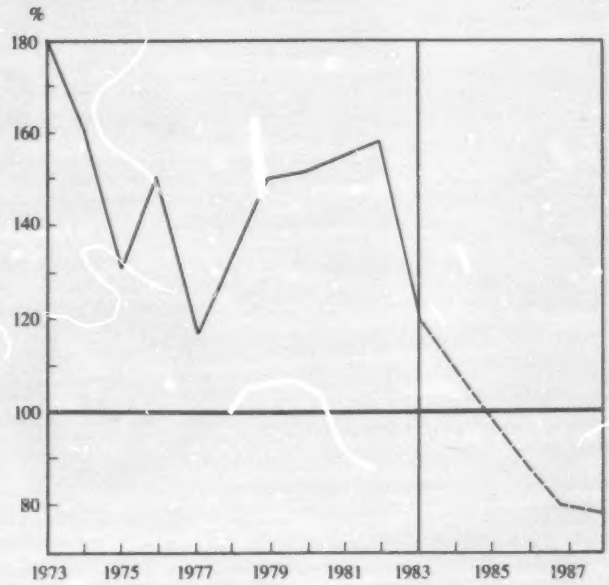
The Quality and Composition of the Teaching Force

The nation's teaching force is changing dramatically. The current highly educated and experienced staff is dwindling as older teachers retire and many younger teachers leave for other occupations. Recent evidence suggests that new recruits to teaching are less academically qualified than those who are leaving; moreover, the number of new entrants is insufficient to meet the coming demand (Darling-Hammond, 1984). With a new baby "boomlet" beginning to wend its way through the schools, estimates are that the number of new teachers will satisfy only about 70 to 80 percent of the demand for additional teachers by 1988 (see Figure 6). This shortage is caused because the number and proportion of education degrees have plummeted over the past decade (from 21 percent of all bachelor's degrees in 1971 to under 12 percent in 1981), while the number of attritions and pending retirements are increasing.

Teacher shortages are now quite severe in areas such as math and science, and are beginning to spread to other subjects as well. In 1981, more than half of the newly hired teachers in mathematics and science were not certified or eligible for certification in the fields they were hired to teach. More than one-third of newly hired teachers in English, social studies, and other secondary school specialties were not certifiable for their teaching assignments (NCES, 1983b). In 1981, the nation's colleges produced fewer than 1,400 graduates in math and science education combined; only about one-half of these graduates actually went into teaching after graduation. In the following year, about 18,000 math and science teachers left their teaching positions. Furthermore, about 40 percent of the current math/science teaching force will retire over the next decade (NCES, 1983b; NSTA, 1984).

In addition, the number and proportion of black teachers in the teaching force are declining. In 1971, 8.1 percent of public school teachers were black; by 1981, the proportion had declined to 7.8 percent and has continued to drop. In 1981, 6.4 percent of recent bachelor's degree recipients newly qualified to teach were black, but only one-half of them were teaching full-time. In 1980, only 3.9 percent of black male and 5.6 percent of black female college-bound high school seniors indicated that they intended to major in education (NCES, 1982, 1983b). The reasons for these trends and general teaching force trends are discussed below.

Figure 6. Supply of New Teachers as a Percentage of Demand for Additional Teachers.



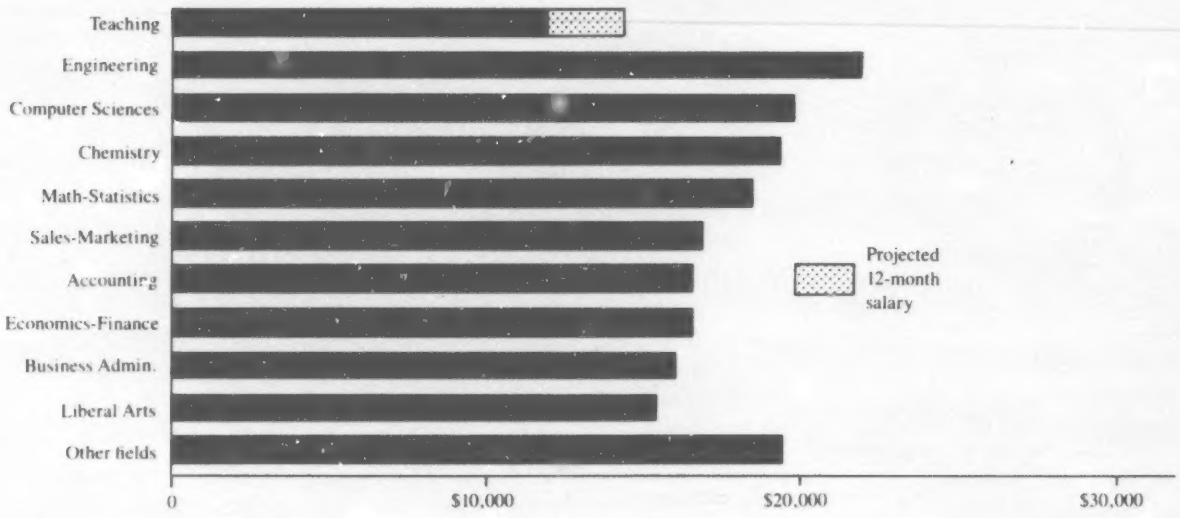
Source: Table 2.9. National Education Association, *Teacher Supply and Demand in Public Schools*, 1973, 1976, 1977, and 1978, and U.S. Department of Health, Education and Welfare, National Center for Education Statistics, *Projections of Education Statistics to 1988–89*, 1980.

Low salaries and low occupational prestige are major reasons for the inability of the teaching profession to recruit new entrants. As Figure 7 demonstrates, beginning salaries for teachers nationwide are lower than those in virtually any other field requiring a bachelor's degree, even if adjusted to reflect a 12-month equivalent. Teachers have lower incremental earnings over the course of their careers, and average annual teachers' salaries have declined by more than 12 percent in real dollars over the past decade (NCES, 1983b).

In addition to this lack of financial incentives to enter teaching, the working conditions of teachers are less desirable in many ways than those of other professionals. Lack of support services, little control over decisions affecting work structure and content, inadequate preparation time, and bureaucratic impediments to teaching all contribute to teacher dissatisfaction and attrition from teaching (Darling-Hammond, 1984; Rosenholtz and Smylie, 1984; Chapman and Hutcheson, 1982). About half of those who enter teaching leave within the first seven years, and the most academically able defect from teaching at much higher rates than the least academically able (Schlechty and Vance, 1983).

As a result of the decreasing attractiveness of teaching as a professional career option, academically able minorities

Figure 7. Beginning Teachers' Salaries Compared to Beginning Salaries in Other Occupations, 1981.



Source: National Education Association, *Prices, Budgets, Salaries and Income* (Washington, D.C.: NEA), October 1982.

and women—who were once limited to teaching as one of only a few professional career alternatives—are no longer entering the occupation in substantial numbers. As discussed earlier, the career choices of minorities and women are becoming more similar to those of white males, and it is primarily the most academically talented who are opting for other fields of study. Of the high school class of 1973, for example, 28 percent of the lowest quintile of SAT scorers went into teaching, and, as of 1980, more than half of them planned to stay. Only 8 percent of the highest quintile went into teaching, and only one-fourth of them planned to stay in the profession (Vance and Schlechty, 1982).

Of 1981 college-bound seniors, only 5.7 percent planned to major in education, including 5 percent of black students and 8.6 percent of women. These represent large declines in the proportions of blacks and women majoring in education. For these two groups, as for all intended education majors, the median SAT scores were lower than for any other intended area of study except ethnic studies, home economics, and trade and vocational majors (College Board, 1982).

The combination of policies affecting the teaching profession—salary schedules, personnel policies, and more general school policies that shape the structure of teaching work—are failing to provide incentives that will attract and retain a high quality teaching force in sufficient numbers to staff our nation's classrooms. As a response to these problems, states have begun to consider and initiate a number of reforms intended to upgrade the quality of teachers. For the most part, however, the current reforms fail to attack the roots of the problem, and may have certain other undesirable consequences. Two of the most popular initiatives—teacher competency testing and merit pay for teachers—are briefly discussed in the following section.

Teacher Competency Testing

By 1983, 30 states had mandated competency tests for teachers and 12 additional states were considering such a move. Most of the testing programs are for initial certification. Despite the fact that research has found no consistent relationship between scores on such tests and later performance as a teacher, these tests are viewed as a means of preventing incompetent teachers from entering the profession.

In the states that have begun administering teacher competency tests, black and other minority candidates have experienced failure rates of anywhere from two to ten times higher than those of white candidates. In the south, black candidates from predominantly black colleges have failure rates much higher than black students from predominantly white colleges. Where states have tied program approval for schools of education to students' pass rates, some black colleges are virtually threatened with extinction (Darling-Hammond and Wise, 1984; Dilworth, 1984).

Whether these outcomes are the result of inferior educational opportunities available to minority teachers prior to or during college, or to cultural bias in the tests themselves, is a matter of much debate. Regardless of the causes of these disparities, the differential pass rates of minority and white candidates on teacher competency tests are a source of social concern, particularly as minority enrollments in public schools continue to grow. Testing advocates argue that, while discriminatory outcomes of testing are unfortunate, the true victims of incompetent

teachers are the students, minority and white, who would otherwise receive less adequate instruction. Others argue that, if the tests do not predict actual teaching performance, they are eliminating minority teachers from the profession at great expense to minority children and to the society at large, without commensurate gain in educational quality.

Even under the assumption that teacher competency tests have some ability to sort more and less qualified teacher candidates, they will have little or no effect on the overall quality of the teaching force. Although they may eliminate some of the potentially less effective candidates from teaching, they do not in any way address the problem of improving the attractiveness of teaching to increase the pool of academically talented recruits. The profession needs magnets as well as screens if current trends in the size and composition of the teaching force are to be reversed.

Merit Pay

Another proposal, popularized by the Reagan administration and intended to offer incentives for in-service teachers, is the concept of merit pay. As generally conceived, merit pay means that a small proportion of teachers evaluated as outstanding would receive a salary bonus each year. Merit pay is not a new idea. It was tried in the 1920s and then again in the 1950s, but with little success. Most districts that tried such plans abandoned them because of faulty teacher evaluation procedures, administrative problems, staff dissension, and financial difficulties associated with implementing the plans (Education Research Service, 1979).

The skepticism of most teachers toward the merit pay concept is partly due to lack of confidence in current teacher evaluation procedures—which suffer from the lack of administrative time and expertise to produce valid results—and the generally low level of basic salaries for all teachers. The advent of the single salary schedule earlier in this century was in part the result of certain outcomes of "merit" pay: secondary school teachers were paid more than elementary school teachers; men were paid more than women; and white teachers were paid more than black teachers.

Since the numerous "excellence" reports were issued, a number of school districts, and some states, have initiated new programs based on the concept of merit pay. However, even if the technical details of merit pay are fully conquered, it is unlikely that these initiatives will do much to encourage new recruits to enter teaching or to convince those already in the teaching force to stay unless major changes in the salaries and working conditions of teachers are made.

Alternative Approaches

A comprehensive approach to reform of the teaching occupation would include at least the following: (1) increases in teacher salaries to make them professionally competitive with other occupations; (2) recruitment incentives such as scholarships and forgivable loans for academically talented college students to enter teaching; (3) improvements in teacher education to make it more intellectually rigorous and requirements for an internship supervised by a senior teacher before tenure is granted; (4) improved working conditions that allow teachers more time to teach, prepare, and share in instructional decisionmaking; and (5) increased responsibilities for expert, experienced teachers who would supervise new teachers and assume program development roles as they move up a differentiated career ladder (Darling-Hammond, 1984).

Unless significant changes are made in the structure of the teaching occupation, educational quality and equality will suffer. The nation will face teacher shortages that will require hiring the least academically able graduates to fill these vacancies, and they will become the tenured teaching force for the next two generations of American school children. Minority children are most at risk, for they attend school in the areas of the country and school districts where salaries and working conditions for teachers are least conducive to the attraction and retention of high quality teachers.

Conclusion

Black students have made great strides since 1960 in pursuing and profiting from enhanced educational opportunities. Levels of educational attainment have improved, and disparities in fields of study and later career options have begun to narrow. Some erosion in these gains has occurred since 1975, however, and current policy trends threaten to reverse the movement toward equality.

"Excellence" for black students will not become a reality unless and until they receive enriched curricular opportunities in elementary and secondary schools, sufficient financial assistance to pursue higher education opportunities, and instruction from well-qualified teachers. Attainment of these goals means that the excellence agenda for black students cannot ignore the adequate and equal financing of public education, the appropriateness of courses and achievement measures that are intended to enforce higher standards, or the policies that will ultimately determine who will teach in our schools.

Of paramount importance is the content and *substance* of education received by black students. Although finances and broad program supports cannot be ignored, in the final analysis it is the interaction that goes on between students and teachers in individual schools and classrooms that defines educational quality and equality. Subtle and not-so-subtle differences in curriculum track, in course content and teaching methods, in the qualifications and commitment of school personnel, and in the opportunities for innovation and enrichment at the school site ultimately determine which students will receive a true education and which will merely be trained to assume a permanent role in the nation's underclasses.

Attention must be paid to matters of curricular equality and to questions of pedagogy, as well as to issues of resource allocations. The kinds of questions that must be asked and answered are not those typically confronted by policymakers. How are curriculum tracking decisions made? Are poor and minority students being denied access to more challenging curricular opportunities early in their school careers for defensible reasons or because of administrative barriers and lack of vigilance? Are they disproportionately exposed to didactic teaching techniques aimed at the acquisition of lower level cognitive skills rather than to the kinds of reading, writing, and problem-solving activities that enable concept development and the acquisition of higher order thinking abilities? What are the effects of basic skills testing on the curriculum received by these students? Do they receive challenging instruction from the district's most highly qualified teachers, or are they taught by a parade of substitute teachers, inexperienced teachers, and teachers teaching outside their field of certification? Are their schools enriched by extracurricular opportunities and "frills" in the sciences, arts, and humanities, or are they confined to "basics" so lacking in opportunities for exploration and self-expression that a zest for learning is replaced by resignation to educational drudgery?

Advocates for minority students must insist that the less tangible features of education demanded for their children by advantaged parents are made available to less advantaged students as well. The issue is not "better" compensatory education, or even "better" test scores; the issue is better education in the hour-to-hour and day-to-day interactions between students and the teachers who serve them. The quest is for education that will challenge, inspire, and stretch students while opening doors to new opportunities rather than screening them out with curriculum and tracking policies that constrain real learning growth.

These are not issues that are currently at the forefront of the nation's attention. Educators and policymakers who are concerned about equality, as well as fundamental excellence, must put them there.

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